Volume

File No. W 77 KA 70

MYSORE GOVERNMENT SECRETARIAT

Notes/Correspondence/Collection

Department Public Works Section General Irrigation.

Subject :— Krishna Godavari Waters Disputes — Statement of Case etc.

Earlier References :—

Later References :—

(Classification ~~A/B/C~~) 5/1/78

Notes Pages 19

Correspondence Pages 301

For/Not for Section Note Book

To be destreyed after 1988

Under Secretary to Government.

pl. preserve
CSS
31/5/84
U/S (Tech.)
P.W. & Elec (Irrign)
Rept.

25/7/70
16/3/72

DOCKET SHEET

Department: Public works. File No. PWD 77 BRA 70

Section General Irrigation. Volume: III

SUBJECT

Krishna Godavari waters Disputes – Statement of Case etc.,

Number and Date 1	To whom sent 2	Instructions 3
Secy. PWD. No. 2384 Date 25.6	Secy. Govt 29.6 AS 1.7	
G.S. 1361/71 29-6-71	Secy PWD.	
F 1394/DS1/71		
F 1456/DS1/71		
PWD. 2177 Date 30.9	Secy Govt 4.X	
G.S. 2661/71 4-10-71.	Secy PWD.	
F 1923/DS1/71		
Secy. PWD. 2381 Date		
5321 Date		
5441	15/12	
F 2683/DS1/71		
Secy. PWD. 743 Date 6.2	Secy	

[P.T.O.

(1)

Note-1.

Reply to our letter dt. 16.4.1971 (Sl.No.1) has not been received from the Central Board of Irrgn. and Power New Delhi. A reminder is put up at Sl.No.2 for perusal and approval.

24/5/71.

Sl.No.2 Issued to the Chairman C.B & P. on 27-5-1971.

Note.2:

Sl.No.2 (Receipt) Lr. No. WRDO/KGW/AGR/ dt. 8.6.71. from the Director, WRDO.

Submitted for perusal. The Director, WRDO has requested for approval of Govt. for the agreement arrived at in the informal meeting of the engineers of the Mysore State and Andhra Pradesh held at New Delhi in first week of May 1971. (Ref. Note.15. file No.PWD77BRA70 Volume-I).

15/6/71.

Note-3

Please see the letter of the Director, WRDO, at Sl.2 He has enclosed a copy of the proposed draft agreement relating to the restrictions to be placed both on Mysore and Andhra Pradesh regarding the construction of new irrigation works in the Vedavathi sub basin in the Krishna Valley as required by the Krishna Water Disputes Tribunal. In this regards the detailed note at paras 13-14 of the note 15 and further notes at 16-19 of the file PWD 77 BRA 70 Vol.I (Flag 'F') may please be seen. The draft agreement now proposed is on the same lines as indicated as at note 15 and in addition restrictions have also been proposed to be placed on AP on the same lines on which such restrictions are being agreed to in the case of Mysore. This draft agreement has generally been agreed to by the Advocate General of Andhra Pradesh during our meetings at Delhi. But it has not yet been filed with the Tribunal. The position of this agreement would be Status-Quo . In otherwards the restrictions that are now existing on the construction of irrigation works in the Vedavathy vally in the 1892 agreement will continue. But under a new and separate proposed agreement there is no reference to the 1892 agreement. In otherwards by entering into this agreement no fresh commitment other than that which is already existing is being entered into. The general spirit of the agreement

has already been approved by the Chief Minister at note 19 of the file placed below. We may communicate the approval of the Government for the proposed agreement. This agreement has been scrutinised by our Counsel Sri T.Krishna Rao, Ex-Advocate General.

24/6
(S.K.Mohan)
US. PWD (Tech)

DS)

Addl Secy P.W.D)

25/6/71

Addl. Secy., P.W.D
No. 1112 Date 25/6

-4-

The draft agreement arrived at between the representatives of A.P. & Mysore, informally, together with its two Schedules, may be agreed to, before it is submitted by Mysore as A.P. to the Tribunal.

The main reason for entering into such an agreement is to obviate the necessity of the K-G Tribunal having to decide the issue of validity of the 1892 Agreement as, a greater stake is involved for us if the quality of Cauvery in this point between us and Tamil Nadu goes before a Tribunal. Secy may also kindly bring this to the Notice of Governor

25/6/71
IFTEKHAR AHMED,
Addl. Secy., PW & E Deptt.

Secy PW

-5-

28/6

-6-

Governor)

GOVERNOR
3.7.71

Secy PWD

1/7

Addl Secy

1/7/71

USLT)

1/7/71

-7-

A draft letter to the Director of W.R.D.O. is put up at Sl. No. 3 for perusal and approval.

2/7/71.

Sl. No. 3. Issued on 7-7-71 to the Dir. W.R.D.O.

-8-

A draft Reminder to the Chairman C.W.& P.C. is put up at Sl. No. 4 for perusal and approval.

8/7/71.

8/7

US(T) -9-

We have addressed the C.B.I.P. to accord approval to Sri. Doddrich, tendering evidence before Krishna Water Disputes Tribunal. So far we have not received their consent. The oral evidence commences on 2-8-71 and for prompt conclusion it is suggested that the Chairman C.B.I.P. be reminded by a D.O. from the Addl. Secy. A draft is placed below for approval.

Addl. Secy., PWD
No. 1302 Date 9/7

Addl. Secy.)

-10-

9/7

13/7/71

13/7/71

14/7

Issued on 22.7.71.

(1) Sub:- Krishna Godavari waters Disputes. PWD 77 BRA 70
Statement of Case etc. Vol. III

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Sl.No. 8 (Receipt) telex message No. 460/11 dt. 2.8.71. from Spl. Commr. N.D. from ~~C.E.~~ WRDO. N.D.

- 11 -

Submitted for perusal. A draft letter to the Secretary Tungabhadra Board is put up for perusal and approval.

2/8/71.

Sl.No. 9 Issued to the Secy. T.B. Board on 3.8.71.

-12-

Sl.No. 11 (Receipt) telegram dt. 11-8-71 from The C.B. & P.N.D.

Submitted for perusal with reference to G.O. No. PWD 299 SPG 71 dated 21-7-1971 (Sl.No. 10) appointing Sri. D. Doddaiah as Consultant to Govt. of Mysore. In view of this no separate orders sanctioning T.A. & other allowance for the journey to be performed by him for tendering evidence before the Tribunal are necessary. A draft and fair letter to the C.E. WRDO forwarding a copy of this telegram is put up for favour of signature & orders.

18/8/71.

Sl.No. 12. Issued to the C.E, WRDO on 19-8-71.

-13-

M. G. S.

Subject: Krishna Godavari Waters Disputes Statement of Case.

File No. PWD 77BRA70. Vol. III

WD 01050—GPB—8,00,000 13-12-65

Note-13

Sl. No. 13 (Receipt) lr. No. WRD/KG/71 dt. 14-8-71. from the C.E, W.R.D.O.

Submitted for perusal.

19/8/71.

P.A. put up after my return from Delhi

Note-14.

25/8

Sl. No. 15 (Receipt) lr. No. 6037/F.107(A) dt. 11-8-71 from the Secy: C&IP.

Submitted for perusal, with ref. to Note 12 ante. A draft letter forwarding a copy of this letter to the C.E. WRDO is put up at Sl. No. 16. for perusal and approval.

31/8/71

31/8/71

Sl. No. 16 Issued to the C.E. WRDO on 3-9-71.

Note-15

Sl. No. 17 (Receipt) lr. No. 11-5/70-Adm. dt 31-8-71 from National Comm. on Agriculture

Submitted for perusal w.r.t Flags A and B in file No. PWD 77BRA70 Volume I placed below. Dr. H.R. Arakeri is tendering his evidence before the Krishna water disputes Tribunal on behalf on Govt. of Mysore and at the Request of Govt. of Mysore he has been permitted to do the same by G.O.I. Hence the TA/DA has to be borne by this State Govt. only. A draft letter to the Director of Administration, National Commission on Agriculture is put up at Sl. No. 18 for perusal and approval.

Addl. Secy., PWD
No. 2129 Date 14/9

10/9/71

Dr. Arakeri is at Delhi with H.Q. at Delhi, hence no T.A and D.A. is involved. However if he were to tender evidence in any place other than Delhi, then the same can be met by this Govt. For perusal.

13/9/71

Addl Secy P.W.D.

(6)

The Krishna Water Disputes Tribunal met on 19th July 1971. The oral evidence was to have be commenced from 26th July 1971. But since Andhra Pradesh had filed a large number of documents relating to the Krishna anicut ~~work~~ - the river gauge registers and river charts and also a number of estimates relating to various works taken up under the Krishna delta ayacut, it was pleaded by both Maharashtra and Mysore that time would be required for studying all these documents and only after examining these documents, orgal evidence could begin. It was therefore agreed that the date for oral evidence should be postponed to 26th August 1971.

Therefore during the period, all the State representatives were present in July meeting ~~and at that time~~ it was suggested by the Tribunal that the question relating to the annual upstream utilisations above the Vijayawada anicut be examined.

Upstream utilisation above Vijayawada consists of utilisations under Minor irrigation works and utilisations under the Major and Medium irrigation works. Discussions were held for a number of days between the engineering representatives of the 3 states and the utilisations under the various major and medium irrigation projects for the period 1901-02 to 1950-51 were worked out and agreed. As regards the utilisation beyond 1951-52, there was not complete unanimity, but between Maharashtra and Mysore the figures were agreed to. The figures relating to the utilisations prior to 1951-52 are essentially based on the figures previously worked out by the C.W. & P.C. These agreed statistics relating to the upstream utilisations may be seen at Flag (A) and they have been received in evidence by the Tribunal.

The exact determination of utilisations under minor irrigation works year to year was found difficult and therefore it was agreed that the ~~year~~ area under irrigation may be taken as, as indicated in the agricultural statistics, statistical abstracts or seasonal crop reports under the heads canals, tanks and other sources. Based on the above procedure, the utilisations under minor irrigation works in the Krishna Basin in Maharashtra, Mysore and Andhra Pradesh for the period 1941-42 to 1966-67 were worked out and were agreed to. For working out the utilisation under/irrigation works the areas as given under the agricultural statistics were adopted and adopting the duties realised in those areas, the water utilised for irrigating these areas were arrived at. The agreement relating to the year-wise areas irrigated under Minor irrigation works and their utilisations may be seen at Flag (B).

/Minor

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The agreement relating to the procedure for working out these utilisations may be seen at Flag (C). The further agreement relating to a few Minor Irrigation works left off in the previous agreement may be seen at Flag (D). These utilisations under Minor Irrigation works sub basin-wise were further worked out and agreed statement may be seen at Flag (E) All these agreed statements relating to Minor Irrigation works have been filed with the Tribunal as evidence.

Tribunal which held its meetings from 19th to 30th July 1971, reassembled on the 26th August 1971. Till 6th Sept, certain miscellaneous matters relating to the admission of documents filed by Andhra Pradesh and Mysore were taken up and disposed. The oral evidence was commenced by the Maharashtra State from 6th Sept 1971. Their witness was Sri K.K.Framji and till 17th his examination continued. Since he took ill, further examination of the witness was adjourned on 20th. Since the Tribunal had already programmed to go on an inspection of the various project sites in Maharashtra Mysore and Andhra Pradesh, from 4th October 1971 to November 3rd, it was decided that further examination of the witness would be continued from 22nd Nov.

The Maharashtra witness has given evidence on the reliability of model studies for determination of the discharges in a river, the accuracy of the model studies and the accuracy of the various model studies so far conducted at Madras, Hyderabad and Poona Research Laboratories in connection with the determination of the discharges passing over the Vijayawada anicut. The witness also has given evidence to show that in the absence of gauge flow discharge relations the use of Emperical formula for the determination was the next best possible tool. It was also made out by him that the Inglis formula was more applicable and reliable than the Strange's formula in the determination of the utilisations in the Krishna basin. The witness also made out that regeneration from the irrigated areas was of the order of 20 to 50 percent and as a conservative measure a figure of 10 percent could be adopted and 120 TMCFT. added by way of regenerated flow to the dependable flows for allocation.

The witness also made out that Srisailam and Nagarjunasagar reservoirs had extra storages available which could be utilised as carry over storages to an extent of 120 TMCFT. thereby increasing the dependable flows available for allocation from 2176 TMC to about 2300 TMCFT. The evidence on this last issue had not yet been completed by the witness. After his evidence he will have to be cross examined by Mysore and then by Andhra Pradesh. After such examination is over of this witness, Mysore will have to put up its witness if any, or else Andhra Pradesh will have to bring in their witness. The question of cross-examination of

(8)

Maharashtra witness was examined and it was decided that it would not be necessary to cross - examine the witness by Mysore.

Whether the Agreements of 1892 and 1933 so far as they relate tom Krishna river and its tributaries subsist and whether they survive on the merger of the Princely State of Mysore in the Republic of India and whether they have ceased to be operative on the reorganisation of States is an issue before the Tribunal. Considering the fact that 1892 Agreement willhave to be a matter of dispute in the Cauvery water dispute and also considering the fact that there is very little scope for further development of waters in the Vedavathy basin, it was suggested by the Tribunal, that we may laid down mutual restrictions on further utilisations of waters in the Vedavathy valley for new works and avoid the 1892 agreement altogether. This aspect has already been examined and the same has been agreed to. In the present session of the Tribunal, the above agreement was duly signed and was received in evidence by the Tribunal. Please see Flag (G).

N/F Paras 15-18
PWD 7708870
Vol I. Pg 1

DS

Secretary PWD)

24/9

(S.K.Mohan)
US PWD (Tech)

25/9/71

-17-

Governor may kindly peruse the above note. The Tribunal is trying to secure the agreement of the parties on as many issues as possible so that their Award may become realistic and meaningful.

S. Varadan
1/10/71

-18-

Governor)

GOVERNOR
5/10/71

Sec'y (Irr.)

4/71

6/10

DS 1

6/10/71

Sub:- Krishna Godavari waters Disputes - Statement of Case etc.

PWD 77 BRH 70.
Volk III.

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Submitted for perusal of Note 15/ante with Ref. to page 88

8/x/71. For the present no action is necessary. In all probability we may have to put in any evidence at all. May be have to keep up after some time.

8/10

Receipt No. 3555 dt. 17.11.71. from C.E. (N)

20) Submitted for perusal of D.O. lr. No. CEN. PS. 71 dt. 2.10.71. from C.E. Irgn. (N) Dharwar at page 193.

18/11/71

21) We may obtain the remarks of CE(WRDO) on this.

18/xi

22) A draft letter to the C.E. WRDO is put up for perusal and approval.

19/11/71.

23) Issue & put up file for perusal of DS

19/xi

Issued to the C.E. WRDO on 23.11.71.

24) Submitted for perusal of D.S. (I)

24/11/71. 25) The Note of CE (I) N. placed at page 192 of C/F may please be perused. The remarks of CE. W.R.D.O also are called for.

24/12/DS(I)/71

Addl. Secy., PWD
No. 2642 Date 29/11

Addl Secy P.W.D
Secy P.W.D

7/12/71

28/11/71

(11)

26) The points raised by CE (IN) are interesting and broadly conform to the impression I gathered after I met the Chairman of the Tribunal. Instead of corresponding with Director WRDO, it may be useful if Addl Secy could discuss with him to finalise our strategy

S. Varadan 13/4/91

Addl Secy)

27) I had already discussed this with CE/WRDO before he left for Delhi. The main question raised by CE/N is about our asking for 50% distribution of waters on dependability. Even though we had asked originally, in our initial Statement of Case, for distribution of waters on 75% dependability, as Maharashtra and AP had also done, we had prayed for a final allocation on a certain percentage of the yearwise receipts, keeping us free to build storage reservoirs to any carry over capacity unquestioned by other States. Thus we have been vigilant from the beginning

28) As regards the machinery for implementation, we have our ideas ready, but no State has yet put forward its ideas to the

(V)

Tribunal, as what CE/N has said is loud thinking on their part.

29) Anyway I have asked CE/WRDO, who is now at Delhi, to put up the matter various points before the K.G / Experts Committee, after his return from Delhi

14/12/71

Seen S. Mukerji 17/12

DSI (Pl. write as at A above) 17/12/71

Receipt No. 5778 dt. 1-12-71 from C.E. WRDO.

30) Submitted for perusal with Ref. to note 355 ante. Addl. Secy; P.W.X.E. Secy; P.W.X.E. and Governor, have already perused the Agreement.

31) As regards para 29. A draft letter to the C.E. WRDO is put up at page 202 for perusal and approval.

17/12/71.

18/12/71

Issued on 22-12-71.

Received back from U.S. (T) with the instructions to put up on his return from Delhi.

31/1/72

(12)

The State of Andhra Pradesh during the visit of the Hon'ble Tribunal in Mysore State pointed out that Mysore had established two Lift Irrigation Works on the Rajolibanda canal and thus drawing additional waters from the canal. The State of Andhra Pradesh also during the inspection made out that we are drawing waters from the Gundlakere vanka and the Tungabhadra Reservoir far in excess of the requirements of the Vijayanagar channels. The State of Andhra Pradesh also made out that the road bridge constructed at mile 124 of the Left Bank Canal was an indication to prove that the State of ~~Andhra Pradesh~~ Mysore had proposed to extend irrigation under the Left Bank Canal beyond mile 141. All these contentions made by the Andhra Pradesh during the tour of the Tribunal are considered by Andhra Pradesh to prove their contention that the Tungabhadra Project and R.D.S. should be under the control and management of a Control Board etc. The State of Andhra Pradesh have filed an additional statement of case stating these facts as were pointed out by them to the Tribunal during the tour. This additional statement Fly A was filed by Andhra Pradesh on 7-1-1972 before the Tribunal. We have been ordered to file are reply or rejoinder to this statement of Andhra Pradesh by 28th January 1972.

A rejoinder to this additional statement of Andhra Pradesh has been prepared and placed below. This rejoinder Fly B has been discussed with the Chief Engineer, M.R.D.) and has been approved. This was further discussed with the Senior Advocate Sri T.Krishna Rao appearing for State of Mysore and certain corrections suggested by him have now been incorporated in the same. The final draft as approved by the Chief Engineer and as agreed by Senior Advocate is placed below. The same may kindly be perused and approved.

The contention of Andhra Pradesh that Mysore State is drawing additional waters under the R.D.S. has been denied and it has been made out that the irrigation in Andhra Pradesh has not suffered at any rate and that the waters drawn by them at their border is also much in excess of their actual requirements as agreed to by themselves. Since the gauging observations in the R.D.S. Canal were not correct and since it was observed that the head sluices have not been properly calibrated nor has the canal been properly calibrated, it has been made out in our reply to Andhra Pradesh, that it would be desirable to calibrate this canal jointly both at the head and at the border and apply the same in future for the regulation of the canal according to the agreed utilisations of 1.2 T.M.cft and 15.9 T.M.cft between Mysore and Andhra Pradesh.

As regards the allocations made by Andhra Pradesh about the excess withdrawals under the Vijanagar Channels we have denied them all and it has been made out that since Mysore State has claimed only 13.7 T.M.cft. of water for these various Vijanagar channels and since the allocations by the Tribunal will be based on this and since the Tribunal will ultimately indicate in its award the method of regulations of the various river waters, it would not be necessary to apprehend that Mysore will draw excess or additional waters under any channels.

contd.

(13)

On the Left Bank of the Tungabhadra Dam in addition to the Left Bank Canal we have a very small left bank High Level Canal. Since the original project of Hyderabad for the Left Bank Canal included the portion of the High Level Canal also in it, in our statement of case we have not separately claimed additional waters for this High Level canal. The State of Andhra Pradesh have made out that Mysore may draw about 5 T.M.Cft. of water under this canal and that Mysore had not accounted for any utilisation under this High Level Canal. We have made out in our reply that since it is a part of the Left Bank Canal, the utilisations under this High Level Canal and the Left Bank Canal will be restricted or limited to the quantum of water claimed by Mysore State under the Left Bank Canal. In otherwords, we have made it clear that Andhra Pradesh has no reason for ~~such~~ any apprehension.

As regards the claim of Andhra Pradesh that the design of the road bridge in Mile 124 of the Left Bank Canal proves the proposal for extending irrigation in Alampur and Gadwal taluks beyond mile 141. It has been made out that the Left Bank Canal is a navigable canal upto mile 127, and therefore the design of the road bridge in Mile 124 was based on navigation requirements and has no relation what so ever with providing irrigation beyond mile 141, since no such scheme was sanctioned by Hyderabad prior to re-organisation. We have therefore denied the claim of Andhra Pradesh for any waters under the Left Bank Canal for extension of irrigation in Alampur and Gadwal Taluks.

The State of Andhra Pradesh have made out that it is necessary for the Upper States to provide river sluices in all their dams so as to ensure timely supply to Andhra. We have denied the need for any such provision. It has been made out that the waters that will have to be led down for the utilisation in the lower States as per the allocations to be made by the Tribunal will be done by operating the canal sluices and the power sluices and it is not necessary to let down such supplies through the river sluices alone.

DS
Addl. Sec
Sec

14/1/72

Under Secretary to Govt.
P.W.D.(Technical).

14/1/72

-33-

The Rejoinder has been convincingly drafted and may be approved

15/1/72

-34-

17.1.72

US (T)

17/1

Received instructions from U/S (T) to keep this file in Secs.

17/1/72

This is a note in continuation of Note 16 bringing out in brief the proceedings of the Krishna Water Disputes since then.

As stated in Note 16, the Tribunal visited the various project sites in Maharashtra, Mysore and Andhra Pradesh from October 4th, 1971 to Nov. 4th 1971. During the course of their tour to Tungabhadra Project area and the Upper Krishna and Malaprabha projects, the representatives of Andhra Pradesh who accompanied the party during the tour pointed out certain facts at site in support of their argument for having joint control particularly for the operation of the Tungabhadra and RDS Head works. On 22nd November when the Tribunal met again at Delhi, the Andhra - Pradesh Counsel was asked to file a supplemental statement bringing out the various issues brought to the notice of the Tribunal during the tour, if it was considered necessary by that State. Accordingly the State of Andhra Pradesh filed their statement of case in this matter on 6-1-1972 and we have filed our reply to the same on 28-1-1972. This statement of case of Andhra Pradesh and our reply to it has been dealt in in Note 32 ante. A copy of our re - joinder as filed with the Tribunal is placed at page 342-324 (Vide Flag 'C') for kind perusal.

The further examination of the Maharashtra witness was continued by the State of Maharashtra from 22nd Nov. After two days their examination was concluded, and the cross examination of the witness was taken up by the State of Andhra Pradesh.

After the conclusion of the cross examination of the Maharashtra witness, the case relating to oral evidence was over. The next turn for putting up the witnesses was that of Mysore. Originally it had been intended to put up Dr. H.R.Arakeri, Ex-Director of Agriculture, Mysore State and Sri Krishnan, Climatologist, working in the Arid Research Institute, Jodhpur as our witnesses for deposing towards the availability of good and rich soils in Mysore State which are well suited for irrigated agriculture and also to depose that Mysore State had a large area

(B)

of arid and semi-arid lands in the Krishna basin. On a further consideration, it was found that these two aspects regarding the large area of arid lands in Mysore State and the suitability of land in Mysore state for Agriculture had not been disputed at all and the only controversial factor was the comparative extent of such land in Mysore State vis-a-vis the two other States. It was also observed that other two states had not proposed to put up any witness to prove their case on these aspects. Therefore, it was felt that our case with regards to these two aspects of aridity and suitability of lands could be proved by the help of documents and there was no need to put up any oral evidence. There - fore the question of bringing in Sri Krishnan or Dr H.R.Arakeri, to the witness box on behalf of the State of Mysore was dropped.

The State of Maharashtra through their witness had shown that there was available in the Nagarjunasagar and Srisailam reservoirs a storage of about 180 TMC. beyond the requirement of the irrigation under those projects. This additional storage was therefore considered as available for storing the surplus waters during the good years and thus increase the storage available in the entire system. The Maharashtra's witness therefore made out a case that by such carry over storage, the dependable flows in the Krishna basin could be increased from 2176 to 2300 TMCFT. and that the 2300 TMCFT. should be allocated between the States.

After an examination of the data available, it was considered feasible by Mysore to further increase the dependable flows available by creating an additional carry over storage of 103 TMCFT, and bring up dependable yield from 2300 to 2406 TMC. In support of this case, Sri B.C.Angadi Chief Engineer, Water Resources Development Organisation was proposed as a witness on behalf of the State of Mysore. His evidence was given on 5th, 6th and 7th Jan 72. A typed script of the evidence given by him is at pages 251 to 223 for kind perusal (Vide flag 'B') It has been made out by this witness that there is a possibility of creating carry over storage in Mysore State at the Upper Bhadra project site, Upper Tungabhadra, Lakvalli reservoir and at Almatti dam site. By this evidence, we have indicated to the Tribunal that as against the dependable flow of 2176 MTCFT. available, as determined by the model studies conducted by the CWPRS

Poona in 1967, we can increase the dependable flows available by creation of carry over storages in the new reservoirs in Mysore State and also by utilising the existing carry over capacity available at - Srisailam and Nagarjunasagar reservoirs. By such use of carry over capacity, it has been proved that the dependable flows can be increased upto 2406 TMCFT. The Tribunal has therefore been shown that the - surplus flows that would otherwise have gone waste to the sea could be held over in carry over storages and the utilisation potential in the entire basin be increased to the extent of 2406 TMCFT.

Our witness was cross examined by Andhra Pradesh also. After the cross examination was completed, the State of Andhra Pradesh had to put up its - witnesses.

The State of Andhra Pradesh took up its evidence from 7th Jan. 1972. So far the examination-in-chief and the cross examination of four witnesses for Andhra Pradesh has been completed. The fifth witness is still in the box. His examination-in-chief has been - completed and the cross examination has been taken up. The four witnesses so far examined by Andhra Pradesh were essentially to prove the condition of the - Krishna Anicut as it existed before the construction of the Prakasam barrage, and the various documents and the files relating to that anicut. It would perhaps be necessary to explain briefly the - importance of the Krishna anicut in this dispute.

In the July 1951, Conference that took place between the States of then Madras, Hyderabad and Mysore and Bombay and Madhya Pradesh, the dependable yield in Krishna river were assessed as 1715 TMCFT. It has been our contention, as well as the contention of the State of Maharashtra, that the gauged yields which were estimated as 1715 TMCFT in 1950 were under-estimated and the actual flows would be atleast 12½% more. The Krishna Godavari Commission which went into the matter of the utilisations and yield available in the Krishna basin felt that the yields would have to be determined, by conducting model studies of the Krishna Anicut. Accordingly, certain model studies were conducted by Poona Research Institute as well as by the Hyderabad Research Institute. But, these models were of a very small scale. Again, after the Union Minister of Irrigation made certain interim ad-hoc allocations to the States of Mysore, Maharashtra and Andhra Pradesh in 1963, a Committee of Chief Engineers of all the States was formed to determine correctly the yield available in the - Krishna basin and other matters. This committee which was constituted in 1963, went into these questions and took the initiative for conducting fresh three-dimensional model studies on a large scale model at Poona for determining the flows at Vijayawada, on the Krishna anicut for the entire period from 1901-1951. In 1967, model studies were

(17)

were conducted by Poona Institute and the representatives of all the States inspected the model to verify and to determine as to whether the model had been constructed truly. During this inspection, the representative of Andhra Pradesh was asked to furnish more detailed plans with regards to the Krishna Anicut. At this stage the State of Andhra Pradesh came out with a plan of the Krishna anicut which showed that the Crest of the anicut was 8' 6", and not 6' as had been adopted in the model by Poona Research Institute. This plan cameto lignt for the first time in 1967. Prior to this model studies had been conducted by Madras, Hyderabad and Poona during 1949 and 1961 and all these model studies had taken the crest as being 6' in width only. The genuineness of the new plan put up by Andhra Pradesh was doubted by both Mysore and Maharashtra States. And we disassociated ourselves with the further experiments carried out by Poona on a model of 8' 6" width.

Apart from the contention that the crest width was not 6 ft. but 8' 6", it is the case of Andhra Pradesh that model studies do not give a reliable estimate of the yield. The main difficulty in determining the exact crest width of the Krishna anicut is that it does not exist today. With the completion of the Prakasham barrage in 1961, the anicut has been demolished, and in its place the barrage is functioning.

The first four witnesses put up by Andhra Pradesh are only to prove that the Krishna anicut as it existed in 1951 did not have a crest width of 6' and that the crest shutter was fixed at 2'6" from the upstream edge of the crest and that in the fallen position of the shutters the crest width would be atleast 8' 6". During the evidence they have shown that the crest width of the anicut was anything but 6 ft. in width. For the purpose of this, they have brought on record, photographs of certain portions of the anicut in 1952 and 1956 and they have also brought on record certain plans indicating the arrangements of shutters over the anicut. The photographer who took these photographs, the Record Keeper in whose position these plans were existing, the Supervisor who was in charge of the maintenance and operation of the anicut and the Executive Engineer in whose office the concerned files relating to the erection

(18)

erection of these gates were found, were all examined. In substance, it can be stated that these witnesses have to some extent, ~~xxxx~~ doubt regarding the exact width of the crest of the Krishna anicut. As per the evidence that has been examined, it could be 6', it could be 8' 6" and it could be 10' 3" also.

The further witness who is now in the witness box is a Professor of Civil Engineering, working in the Kharagpur Institute of Technology and has deposed with regards to the reliability or otherwise of model studies particularly of flows like Krishna Anicut after the determination of the yields. According to him the yields of such model studies are not reliable and will be erring atleast by 15-20%. The cross examination of this witness ~~is~~ by the Advocate General of Maharashtra and if he finishes his cross examination and if he does not cover any important points of view, we have to/examine the witness. The witness of Andhra Pradesh on model studies will be over and after that there will be one more witness from Andhra Pradesh ~~and~~ on carry over storages. Then the Maharashtra may bring back its expert witness in rebuttal and with that the entire evidence may be over. This itself may take atleast a month or so more.

/cross

(S.K.Mohan) 14/2
US PWD (Tech)

DS)

Addl Secy P.W.D

Addl. Secy., PWD
No. 438 Date 15/2

Secy. P.W.D

14/2/72

16/2/72

17/2

(19)

Receipt No. 803 dt 14.2.72.

Your Notes of the Krishna water disputes Tribunal is placed below for perusal. This will be placed in file No. PWD 77 BRA 70 which has been submitted to D.S. (I) on 15.2.72. It is for orders whether a copy of this note may be sent to C.E. Irrgn (N) Dharwar for his information.

15/2/72

15/2

Recorded as above

KRISHNA WATER DISPUTES TRIBUNAL

T O U R N O T E S

~~22~~

5-10-71:

The Tribunal visited the Khopoli power-house. Diversion ~~22~~ 7 TMC. The station can be used as a peaking station and there would be no wastage of water.

6-10-71:

Visited Central Water and Power Research Station at Khadakwasla. Mr. Ghole and Mr. Phansalkar explained the functions of the Rehbock weirs and the model of the Krishna anicut. Andhra Pradesh pointed out that the river conditions reproduced for one mile upstream and half a mile downstream was not sufficient. Mr. Ghole said that since the shoal upstream is about 5 miles long it did not matter whether the upstream is reproduced for one mile or 2 miles. It was also explained that the Sitanagaram gauge gives a higher reading because of the groin walls. The Tribunal inspected both the Vijayawada gauge and the Sitanagaram gauge. The model was run to show the formation of the standing wave flume indicating the free flow conditions.

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PWD (GI. (rrgn).
No 803 Dtd
14.2.72

7-10-71:

Inspected Ujjani dam on Bhima. Maharashtra engineers explained that 70 TMC is the withdrawal through the canals and 20 TMC is the evaporation loss (including that of Pagne dam). It was explained by the Mysore representative that Mysore also has got two proposed projects on Bhima, one lift irrigation and the other flow irrigation scheme

and that Mysore depends on these two projects in Bhima basin. Andhra Pradesh engineers pointed out that no river sluic had been provided in the dam for letting out the water below. Maharashtra engineers explained that provision of river sluices is not a "must".

8-10-71:

Visited Bhatgar dam. Maharashtra engineer explained that the storage is 24 TMC at Bhatgar dam and 9.4 TMC at Vir dam lower down and the total utilisation is 49 TMC.

9-10-71:

Visited the source of Krishna.

10-10-71:

Koyna Project: The Tribunal visited the model roo where the relief model of K-3 sub-basin was explained by the Chief Engineer, Koyna. Maharashtra engineers were asked to work out the water account at Khodshi taking into account the existing, and under-construction projects and also separately taking into account the proposed projects.

(Urmodi, Tarali projects:) The Chairman questioned why Maharashtra wanted Urmodi and Tarali projects since the rainfall in the commanded area was very good. Justice Shamsheer Bahadur questioned Maharashtra asto why the west-flowing rivers cannot be made use of for irrigating the Konkan areas as against the diversion of east-flowing rivers. The Chief Engineer, Maharashtra, explained that there are no suitable storage sites and that the storages would be not only costly but also the quantum would be less. The Chairman observed that Konkan area does not come under the

category of scarcity area. Andhra Pradesh questioned that since Maharashtra have excavated for strengthening the dam at the foot of the dam it should also be possible for laying additional penstocks for purposes of peaking power. Mysore engineers also pointed out that such excavations are being done. Maharashtra denied by stating that it requires controlled blasting and that it is not safe. The Chairman observed that if the other States want to contest the issue, evidence will have to be led.

Inspected Koyna dam. Two questions arose during the discussions with Justice Bhandari. The Chief Engineer, Mysore stated that the installation of crest shutters would be beneficial to Maharashtra since additional head would be available and that the Tribunal may impose restrictions on Maharashtra regarding the quantum of diversion. Andhra Pradesh engineers stated that even without the crest shutters Maharashtra would be in a position to divert more than 67.5 TMC of water. Chief Engineer, Maharashtra, said that unless the geologists recommand installation of crest shutters would be risky. Justice Bhandari observed that Mysore would want the crest shutters as they hope to get releases from Koyna storage and that abundant caution has to be exercised by the Tribunal in this behalf.

Visited Power-house at Pophli in the afternoon. The measurement of flow through the turbines is being recorded. One of the recorders was not working. Maharashtra explained that these recorders cannot give accurate results. On being questioned about their accuracy, they stated that the percentage of error is of the order of $\pm$ 5 per cent. Mysore explained that the quantum of water drawn could be calculated with reference to the total energy produced and that this method could be used as a check over the recorders. Andhra Pradesh

pointed out that power produced is not base load only and that some peaking power is also produced. Maharashtra explained that nearly 80 per cent of the power generated is base load. The Chairman observed that Koyna could be made a peaking load station but in such an event the sanctioned 67.5 TMC cannot be used and that utilisation would be of the order of 36 TMC only. Mysore pointed out that in their Chart No.36 the load factor is indicated as 46.

11-10-71:

The Tribunal left for Hyderabad from Poona and reached Hyderabad on 12th morning.

12-10-71:

Local visits.

~~[illegible]~~

~~[illegible]~~

12-10-1971:

The Tribunal reached Hyderabad on in the morning and made local visits.

13-10-1971:

The Tribunal visited the Andhra Pradesh Engineering Research Laboratories. The officer in charge explained a theoretical model of a weir showing a cross a channel with a curve on the upstream and shoal on the upstream. The model was run showing that at the curved portion the velocity in the outer edge was more than that on the inner side in a curve and that local obstructions of an island created eddies making the flow over the weir non-uniform. Mysore and Maharashtra pointed out that this model has no reference to the Krishna anicut and this was noted. The Chairman asked the Andhra Pradesh engineers that they may give authorities or a note regarding end contractions. Andhra Pradesh agreed that if the model simulates the prototype including the water levels then only one gauge would be sufficient. Rough models of Krishna anicut as on 1893, 1896 and 1925 was shown to the Tribunal. In the evening the Tribunal visited the Himayatsagar which is meant for water supply to Hyderabad. The utilisation is about 4 TMC.

14-10-1971:

The Tribunal visited Nagarjunsagar dam. The water level at 4 P.M. was 553.10. All the crest-gates had been erected. The sill of the canal regulators is +489.00. In the afternoon, visited the Right Bank Canal tunnel. The length of the tunnel is 4138 ft. with a horse-shoe section of 27 ft. diameter. Discharge on this day was 7500 cusecs. Andhra Pradesh engineers

said that no carry-over is available at Nagarjunsagar reservoir. Mysore and Maharashtra engineers wanted the basis for this.

15-10-1971:

The Tribunal visited the model room at the Prakasam Barrage, Vijayawada. Andhra Pradesh showed a photograph of the anicut under repairs during 1953. This photograph is filed by them according to which they say that there are rails at 10'3½" apart. The plough at one end was used to demonstrate how the gates were lifted. Andhra Pradesh engineers tried to make out that the crest is 2' 6" from the gate and as such the crest width was 8' 6". The exact position of the rails with reference to the crest could not be made out. However, on visual inspection it was s that the upstream rail could have been on the sloping portion also. The following is the reproduction of the name plate on the plough:

Name plate of new plough working

STOKES PATENT No.15574/1909
SOLE MANUFACTURERS
RANSOMES & RAPIER LTD.
IPSWICH 1928 ENGLAND.

Name plate on the old Plough

STOKES PATENT No.15574/1909
SOLE MANUFACTURERS
RANSOMES & RAPIER LTD.
IPSWICH 1924 ENGLAND

The Undavalli outfall sluice at Sitanagaram side was shown. This is reconstructed during 1964 with 19 vents of 10' x 8'. This is used both as an outfall sluice and also for drawing water for the Guntur channel. The discharge on this day into the canal was 600 cusecs. The old gauge for measuring the canal discharge at Sitanagaram side was also shown. There was one gauge painted on the upstream side also. There is a new gauge downstream of the new canal regulator. The gauge reading was +360. There are two gauges on the Vijayawada side one for the canal near the regulator and the other upstream of it. The distance between the present barrage shutters and the old shutters was about 110 ft. according to Andhra Pradesh.

16-10-1971:

Visited the Nagarjunsagar Left Bank Canal at KM 115. The tablet indicated that the total ayacut under the left bank canal was 8.8 lakh acres and that below KM 115 the ayacut was 6 lakh acres.

17-10-1971:

Journey to Srisailam from Nagarjunsagar.

18-10-1971:

The Tribunal visited the Srisailam works. Andhra Pradesh engineers showed the relief model indicating the position of the Srisailam dam and Nagarjunsagar dam and Mittalkunda cutting. During discussions the question of carry-over storage available again cropped up. Andhra Pradesh engineers insisted that there is no carry-over available. Maharashtra engineers pointed out that they had already given certain calculations indicating that there would be a minimum carry-over of about

120 TMC and Mysore engineers pointed out that even according to the Chief Engineer of Andhra Pradesh who had furnished two working tables to Planning Commission at the time of clearance to Srisailam project, at level +546 Nagarjunsagar could draw the sanctioned quantum of 264 TMC As such, Mysore and Maharashtra engineers insited that Andhra Pradesh should furnish their set of calculations to disprove the availability of carry-over storage.

19-10-1971:

The ridge between the Pennar basin and the Krishna basin was shown by the Andhra Pradesh engineers. The level was approximately 915.00. They pointed out that by cutting this ridge water could easily go to the Pennar basin.

Inspected the Kurnool-Cuddapa canal. The Water was flowing full in the canal. Mysore and Maharashtra engineers wanted the report, plans and estimates of re-modelling the canal and whether there was any Planning Commission sanction for the same. They also wanted whether any water is let down by Andhra Pradesh into the Pennar valley through tl escape. The Chairman directed Andhra Pradesh to furnish the above information.

Visited the Sunkesula anicut in the afternoon. Andhra Pradesh engineers produced a plan showing the anicut ails. As this had not been supplied to other States, the Chai n observed that this plan should be given to both Mysore and Maharashtra. Justice Bhandari read the extract from K.G.C. Annexure Volume II regarding the observations of the K.G.C. on the length, shape and discharge observations at Sunkesula anicut. Two ft.crest shutters are fixed on the northern

portion of the anicut. The under sluices consist of 12 vents of 6' 6" x 5' at sill 934.61. Zero of the rear pillion gau 926.36; below 11.5 ft. discharge clear overflow, above 11. ft. submerged flow. The length of the south anicut 3294' 5". Effective length 2130 ft. The length of the North anicut 1064'. Effective length 900 ft. Catchment - Free 14505 sq.miles, combined 24,985 sq.miles. S.M. crest 944.81; M.F.L. at 31-10-1916 Front 955.21 and rear 950.11. M.F.L. on 30-9-1964 - 953.81.

20-10-1971:

Visited Jurala scheme.

21-10-1971:

Visited Mile 141 of the Tungabhadra Left Bank Canal and the headworks of R.B.Diversion scheme. Andhra Pradesh pointed out that Mysore is using more than its share of waters at R.D.S. and that they are not getting their share at the border. The Chairman directed that Mysore should show the gauge registers at the R.D.S. Anicut as also the details of the lift irrigation scheme, to Andhra Pradesh.

22-10-1971:

Visited the Tungabhadra Dam ~~and right side canal regulators~~. Andhra Pradesh showed that there was an escape of 4 vents in the Left Bank Canal in its first mile and said that this escape was meant to release Krishna contribution discharges into the river. Mysore pointed out that this escape sluice is not designed for this purpose.

Advocate General for A.P. read out portions of the sanctioned estimate of TBP LBC to the effect that 7000 cusecs are to be drawn in the LBC and 3900 cusecs should be let down through t e sluices. On being questioned as to the quantity that would get released, Mysore Chief Engineer pointed out that at the rate of 3900 cusecs, it works out to about 120 TMC and as such the Chairman disagreed with the contention of A.P. A.P. pointed out ~~thatx~~ the river sluices by the side of the right bank canal regulator stating that this was meant for releases into the river. Chairman asked the Secy. T.B.Board to explain the function of these river sluices and whether they were specifically provided for releases into the river to meet the requirements of 1- Cuddapah Canal, R.D.S. and Vijayanagar Channels as stated by him. A.P. was asked to file any fresh document they have to prove their point. The Secy., T.B.Board was also asked to indicate the quantity let down through these river sluices to which he replied that the working tables of the reservoir indica the quantity. A.P. also complained that Mysore was refusing to give the figures of withdrawals on the left side. On being questioned, the Secy., T.B.Board said that Mysore did not furnish the figures same times. The Chairman directed him to produce the records and also the Working Table. He also noted that there was no dispute regarding the capacity of the reservoir. As regards A.P's contention that they are not receiving their share at the border LLC, Secy. T.B. Board admitted that it is purely an administrative matter of the Board and that the dispute is miner, difference in supply being of the order of about 10 cusecs only. The Secy., T.B.Board admitted that the Board was incharge of the

right half of the dam only and hexxx was asked by the Chairman to file any further material on the powers of the Board. The C.E., A.P. complained that Mysore was digging a new channel on the left side without the knowledge of anybody. Mysore Engineers pointed out that the sanctioned estimate of LBC provided for a High Level outlet on the left side at the same level i.e. 1585.00 as that of the High level channel on the right side and financial provision was also there for the construction of the same. The Chairman observed in the light of the Mysore's contention, A.P's charges were unfounded. However, on the insistence of A.P., the description given in the name board at the Head sluice was noted down(Reproduced below)

Head Sluice of High Level Canal
2 Nos. of 5'x4'
Sill of sluice -- 1585.00
Discharging capacity- 94 cusecs.
Ayacut and discharge required- not given.

23-10-71.

Inspected the ayacut under the LBC upto Keratgi. A demonstration plot of long duration cotton was shown and it was explai. that cotton is a light crop - a Mid rabi crop. The crop seasen is about 8 months - Aug-Sept. to Feb-March. The type of cotton was called Veralakshmi - a cross breed between Lakshmi and Sea Island cotton. It required watering once a week and the ex ted profit was about Rs.4000/acre. The C.E. A.P. was informed by the agricultural expert that only one crop is taken. Two other plots, one of paddy and the other of Hampi cotton, were also shown to the Tribunal. The Chairman remarked that since Mysore has also paddy, they say that the crop pattern is oriented towards light crop only. Mysore C.E. explained that out of 5,80,000 acres under the LBC hardly 75,000 acres was or wet perennial

and balance entirely under light crops. Chief Engineer, A.P. no objection for the cultivation of cotton.

In the afternoon, the Tribunal visited Sanepur anicut. On the way one plot of Manila variety of paddy grown under the Vijayanagar Channels near ~~Eggadura~~ Egalkura in Shivapur village was shown. The yield was 42 quintals/acre. The details of Sanepur anicut as per the name board:-

Length of Anicut	-	700 ft.
Length of ~~xxxxx~~ canal	-	12 miles.
Discharge	-	83 cusecs.
Ayacut	-	2,200 acres.

24-10-71

A.P. took the Tribunal to the Gaddalkeri Vanka escape(on the right side) and also shewed that Mysore was drawing water through the headwork on the Vanka to their ~~Shastri~~ Tunga Channel. Mysore explained that there was nothing wrong in drawing water from the Vanka as it was carrying the surplus waters into the river(after power generation at Hampi) and that only a fraction of the discharge was being diverted to supplement the requirements of area under the ~~Shastri~~ Tunga Channel. No further questions were asked by the Tribunal.

The Malaprabha Right Bank Canal from Ron to Badami was shown to the Tribunal. It was explained that the Malaprabha Project serves scarcity area.

25-10-71

The Tribunal visited the Upper Krishna Project. The C.E.(N) explained the relief model at Almatti Dam site showing the damsites of Almatti and Narayanpur and the commanded area under the project. The Chairman asked why ~~three~~ two dam ~~was~~ were required and how much of rain-fall contribution was taken towards the water requirements of crops. The C.E.(North) explained the necessity for the two dams and about 12" of

useful rainfall is considered while working out the water requirements. On being questioned regarding economic lift for lift irrigation, the C.E.(North) said that about 100 - 200 feet would be the economical lift. The Chairman posed a question whether the Tribunal should keep some water as reserve for future development instead of allocating the entire water now only. The C.E., W.R.D.O. replied that it was for the State Govt. to reserve or not out of the allocated waters. The Chairman asked for a comparative statement of submergence under this project when he compared to some of the Maharashtra and A.P. Projects and also remarked whether it would not be possible to dispense with lift irrigation under this project. The C.E., A.P. pointed out that Upper Krishna Dam Project proposes to irrigate area in Bhima valley out of the Krishna water. The C.E., Maharashtra enquired the stage of the sanctioned project to him which the C.E.(N) replied that Planning Commission sanction was for irrigating 6 lakh acres utilising 103 TNC. The Chairman asked whether the UKP proposes irrigating Don valley also to which the C.E., W.P.D.O. replied that there is a separate proposed project for utilising the waters of Don to the extent of 3 TMC out of 6 TMC yield available. Justice Bhandari asked the question - if Almatti Dam is not there, can Mysore use 103 TNC from Narayanpur? The C.E.(N) said that without the support of Almatti Dam, it will not be possible. Kind attention of the Chairman was specifically drawn to this submission of Mysore and Mysore was asked to indicate how much would be the storage required at Almatti considering only flow irrigation and forgetting all lift. Justice Bhandari stated that according to Mysore about 60 TMC would

be used by direct flow and about 20 TMC from storage at Narayanpur. So the balance of about 25 TMC would require to support the of Almatti Dam. The Chairman said that Mysore says without the support of Almatti, and I cannot understand what is meant by profitable use. Justice Bhandari said that in I Stage, 103 TMC for 10 lakh acres is all right.

The Tribunal then visited the foundation work going on at Almatti. The Chairman said that the provisions as per Planning Commission's letter was only 30 lakhs for this work. The Chief Engineer(North) said that about Rs.2.1 crores has been expended already. The Chairman observed that Mysore may file the expenditure /--

incurred

in case if they want to rely on it and whether it would be a a loss if Almatti Dam is not sanctioned. Justice Bhandari said that the use to be made with the stage at Almatti can be considerered later on. Chairman asked what was the carry over at Almatti to which C.E.(N) replied that it depends upon the final allocations that is made. Chairman said that Andhra Pradesh also says something regarding Nagarjunasagar to which C.E., W.R.D.O. stated that Nagarjunasagar is already built up. Chairman observed that the other two States viz., Maharashtra and A.P. are silent about carry over at Almatti. C.E. Maharashtra stated that he was silent because, he knew the stages at Srisailam and Nagarjunasagar. Advocate for A.P. raised the point whether river sluices are provided at Almatti dam to which C.E.(N) replied that the work is only in foundation stage and it would be thought off at the II Stage. Chairman asked what was the specific point about river sluices. Justice Bhandari said the purpose is for facility of releasing water directly into the river. Chairman asked whether provision for river sluices is made to which C.E.(N) replied that water has to be let down to N'pur dam and there would be no difficulty to provide the sluices.

Visitted Narayanpur Dam works in the afternoon. Works was in full swing. Chairman asked C.Es of Maharashtra & A.P as to what should the Judges see here according to t . C.E., A.P. raised the question of river sluices here also.

26.10.1971.

The Tribunal passed through the commanded areas of Upper Krishna Project. Also went upto Bhima Bridge near Javar

and saw the Bhima Valley. It was explained that these areas needed irrigation facilities and they come under the scarcity area.

27.10.1971.

Proposed irrigated area under Bijapur Lift and Almatti Lift was shown. Chairman asked the energy required and cost per foot lift. An account of recent rains, the rabi crops had come up nicely (from Bijapur to Jamkhandi).

Tribunal visitted the Gokak falls. C.E.(N) explained the discharges to be let down to Gokak Mills as per the agreement. Tribunal then visitted Dhupdal weir. A.P. said that the value of C.D. taken as 3.55 in the weir formula was high. C.E., W.R.D.O. explained that he was examining the point. A.P. Engineer said that Model Studies could be conducted even now and the value of C.D. determined. Justice Bhandari stopped him by saying that it was against their case as far as Model Studies are concerned.

Chairman said that the representatives of A.P. and Maharashtra may visit the Gokak Canal off take if they so desire. He explained that according to Mysore, the Gokak Canal is a separate one and its requirement is not clubbed with at f G.L.B.C. The representatives of A.P. & Maharashtra visitted the off take of Gokak Canal. The register showed that the Gokak Canal discharge had been maintained separately.

The Tribunal next visitted the Hidkal Dam works. A.P. representatives pointed out that no river sluices had been provided to let down water lower down. On being questioned C.E.(N) said that in case the Tribunal were to make any

such orders for letting down dam water, it could always be done from the canal provided the head reaches of the canal are designed for greater discharge.

28-10-71

Tribunal visited Malaprabha Dam works and the tunnel exit on the right bank canal. C.E.(N) explained the various features of the project.

29-10-71

Visited Tunga Anicut. The Chairman observed that it was already a completed project. He enquired whether the details of the model studies to determine the value of C.D.(4.12) has been on record. However he noted that Shah has challenged the yield data at Tunga Anicut. The details of upper Tunga Project was discussed. The Chairman said that this project would again serve Shimoga district which is a good rainfall area. But it was explained that area in Shimoga District is only in the initial reaches and comparatively small when compared to the areas served in Dharwar and Raichur Districts. Dharwar District is ex-Bombay area in T.B.Basin. Chairman asked for the details and area irrigated district-wise.

30-10-71

Tribunal visited the confluence of Tunga and Bhadra at Kudli. It was noted that dischargeof Tunga was more than that of Bhadra.

Visited the areas proposed under the command of upper Bhadra Project. The sudden change in the standi g crops in the Vedavathi basin was noticed as compare to

Tungabhadra basin. Chairman observed that from the rainfall figures, the Upper Bhadra command gets a rainfall of 3" during May and why it should not be taken together with the rainfall of June to September (of 15"(so that a Kharif Crop can be raised. He was informed that May showers are sporadic and ryots will not sow after these showers and it only helps for preparing the fields for sowing. Chairman said that Honnali Taluk seems to be in scarcity area but the rainfall figures furnished do not support it.

31-10-71

Tribunal visited Bhadra Dam. A.P. wanted the following information.

Crop pattern, M D.D.L , Power withdrawals, actual evaporation observed, storage required for utilising 57 TMC and releases from Bhadra Dam and Bhadra Anicut.

Chairman directed A.P. to ask Mysore in writing.

1-11-71

Discussions at Mysore with State Representatives by Justice Bhandari

(1) Division of water - Whether to be final for all times to come or it should be subject to revision or review after a certain period.

The States may consider and give their considered opinion. Tribunal will take its own decision.

(2) Dependability of supply :

As evidence is going on, Advocate for A.P. said that this can be discussed after evidence is over

(3) If Tribunal makes up its mind on point No.1, the States may suggest safeguards required.

~~Bijapur~~
2.11.1971.

Review of Tour by the Tribunal.

Chairman gave an account of the places and projects visitted in Maharashtra, A.P. and Mysore and stated that the tour was heopful as they were informed of the needs of the terrain and personally they came to know many things. The total assessment and allocation to each State has to be done. One important question is what sort of control should be there to see that the upper States should take only 75 percent of the dependable yield and not 100%. Engineers cannot sol and it is finally common sense.

Justice Shamsher Bahadur asked what was the dependable flow available and the extent of committed uses. We have seen the relative needs of the 3 States.

Chairman said that Vijayawada yields may be there but how should it be broken sub-basin-wise. We should have se some more of K-1 Sub-basin. Primarily basin is for Hydrological purposes. From Engineering point, it has no significance but only question of economics. The other point is ~~is~~ whether to divert outside the basin. Having seen T.B.Dam, R.D.S, what control is necessary?

The Tribunal reviewed the tour and heard the Counsel and Engineers of the States.

3.11.71 The tour ended ~~after~~ a meeting with Judges only.

CMP 16(4)/72-KWDT.

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GOVERNMENT OF MYSORE

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

IN THE MATTER OF A WATER DISPUTE AND CONNECTED MATTERS REGARDING THE INTER-STATE RIVER KRISHNA AND THE RIVER VALLEY THEREOF

REJOINDER TO THE ADDITIONAL STATEMENT OF CASE FILED BY THE STATE OF ANDHRA PRADESH

NEW DELHI

JANUARY 1972

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

In the matter of a water dispute and connected matters regarding the Inter-State river Krishna and the river valley thereof.

C.M.P. NO.16(4)/72 KWDT.

State of Mysore .... PETITIONER

In the matter of an application to file the Rejoinder of the State of Mysore to the Additional statement of case filed by the State of Andhra Pradesh under C.M.P.No.16(1)/72 KWDT.

To

The Hon'ble Chairman and the
Hon'ble Members of the Tribunal

The humble petition of the petitioner above-named

MOST RESPECTFULLY SHEWETH:

1. The State of Andhra Pradesh has filed an application seeking leave of this Hon'ble Tribunal to file the Additional statement of case being C.M.P.No.16(1)/72-KWDT, on the basis of "certain facts" alleged to have been discovered during the tour of Projects by this Hon'ble Tribunal. The State of Mysore files its Rejoinder thereto, as follows:

2. The State of Andhra Pradesh has prayed that the control and management of the following works be vested in a joint Control Board consisting of the representatives of the concerned States and the

...2

Government of India.

a) The Head Works of the Rajolibunda Diversion Scheme and the portion of the main canal under the said scheme within the State of Mysore.

b) The Left side of the Tungabhadra Dam and the sluices in the dam on the left side of Tungabhadra.

c) The Left Bank Low Level Canal within the State of Mysore.

d) The Tungabhadra Dam Power House on Munirabad side.

e) Regulation, inspection and control of withdrawals into the Vijayanagar or Pre-Moghal Channels.

3. The State of Andhra Pradesh by its Supplemental pleadings (vide C.M.P.No.16(25)/71-KWDT) has already prayed that the control of Items (a) to (d) above be vested in the Tungabhadra Board constituted under Sub-Section (4) of Section 66 of the Andhra State Act, 1953 (30 of 1953). The State of Mysore has filed its Rejoinder in reply to the Supplemental pleadings of Andhra Pradesh vide C.M.P.No.16(38)/71-KWDT. The State of Mysore relies on the statements contained in the said Rejoinder and craves leave that the same may be read together with the Rejoinder herein. It is respectfully submitted that as long as the Tungabhadra Project and the Rajolibunda Diversion Scheme Head Works lie within the geographical limits of the Mysore State, the claim for vesting their control and management with any other authority is not tenable in law and cannot otherwise be accepted. The prayer of Andhra Pradesh is

essentially based on exaggerated and baseless claims for waters from the Tungabhadra Reservoir. It is not even alleged whether and in what manner are the present interests of the State of Andhra Pradesh prejudiced. It is submitted that the allegations made by the State of Andhra Pradesh have no relevance to the determination of equitable shares of the States in pursuance of the References made to this Hon'ble Tribunal. The decision of this Hon'ble Tribunal allocating the waters will necessarily involve the regulation of waters at the Inter-State borders. It is submitted that the claims of the State of Andhra Pradesh to future user of waters of the river Krishna depend on the terms of the Award of this Hon'ble Tribunal and the provisions of the Inter-State Water Disputes Act 1956. It is submitted that this Hon'ble Tribunal has no jurisdiction to provide for control of a project in one State in any authority or to provide for joint control as claimed by the State of Andhra Pradesh, in respect of works situated exclusively within the territories of the Mysore State, as such a direction would be outside the scope of the Inter-State Water Disputes Act. In any event, as there is no allegation of a present injury, there is no basis for the claim and the same is liable to be rejected.

4. It is also submitted that the prayer made for the establishment of a Joint Control Board for management and control of the various works listed in para above does not form part of the matter contained in the letter referred to the Tribunal by the Government of India in letter No.4/2/70-WD, dated 20-2-1971, for adjudication and in particular the prayer relating to the regulation, inspection and control of the withdrawals under the Vijayanagar Channels has nowhere been mentioned in that Reference. It is submitted that the present

prayer of Andhra Pradesh is therefore beyond the scope of the Reference made to this Hon'ble Tribunal for adjudication and is liable to be rejected "in limini". It is also not permissible for the State of Andhra Pradesh to introduce fresh pleadings at this belated stage.

5. The allegations made by Andhra Pradesh in these further pleadings that Mysore is 'unauthorisedly' utilising excess quantities of water for irrigation under the Vijayanagar Channels and Rajolibunda Diversion Scheme canal etc., are denied and are not true, and are specially made for purpose of prejudicing this Hon'ble Tribunal. Without prejudice to the contention of the State of Mysore that the prayer of Andhra Pradesh is beyond the scope of the Reference made to the Tribunal, it is proposed to deal in the following paragraphs with these various allegations.

RAJOLIBUNDA DIVERSION SCHEME.

6. With regard to the allegations made in paragraph I relating to the Rajolibunda Diversion Scheme, it is submitted as follows:

The States of Mysore and Andhra Pradesh have already filed with this Hon'ble Tribunal an agreement relating to the sharing of the waters under the Rajolibunda Canal vide Exhibit MYK-242. It has been agreed therein that the State of Mysore and the State of Andhra Pradesh will utilise 1.2 TMCft and 15.9 TMCft of waters respectively under the Rajolibunda Diversion Scheme. It is now alleged by the State of Andhra Pradesh that the State of Mysore has installed pumps on the banks of this canal and is unauthorisedly using excess waters. It is also alleged that the State of Mysore has not furnished

the daily gauge data relating to the canal head works and, therefore, there should be a Joint Control Board.

7. The complaint relates to the lift irrigation schemes from the canal. There are only two minor schemes and the quantum utilised is very small and insignificant. The details of these two lift irrigation schemes are given in Annexure at page 18.

8. For working out the utilisation of water by the State of Mysore under this Canal, the State of Andhra Pradesh has deducted the discharges as measured at the standing wave flume at the border from the discharges at the Head of the Canal and the balance is taken as having been utilised by the State of Mysore. It may be pointed out that the canal in the head reach has not been calibrated and on a general check it is observed that the discharges calculated are erroneous. Similarly, it is also the apprehension of Mysore that the standing wave flume at the border is not estimating the flows correctly. To determine the discharged in the canal correctly it is necessary that the canal in the head reach and at the border is calibrated and the discharges reworked out. Before a proper calibration is made, acceptable to both parties, the State of Andhra Pradesh is not entitled to make any demand for details to be furnished or to make a claim for control. Further, the canal losses in the common reach upto the border cannot be attributed to utilisations in Mysore alone but will have to be properly shared between the States of Mysore and Andhra Pradesh.

9. It is further submitted that the State of Andhra Pradesh has not suffered in their irrigation under the Rajolibunda Diversion Scheme in any manner. The following table indicates

the actual area irrigated year-wise from 1961-62 to 1968-69 under the Rajolibunda Diversion Scheme in Andhra Pradesh. It also indicates the quantum of waters that were drawn by them at the border, in this canal, and the actual requirement of water for the area irrigated as furnished by the State of Andhra Pradesh itself.

Year	Area irrigated (acres)	Water drawn at the border TMCft	Water actually required TMCft.	Remarks.
1	2	3	4	5
1961-62	15,819	4.29	2.90	Source:
1962-63	22,594	6.89	4.13	Column 2: Figures as given at col.10 of page 20 of APDK VII.
1963-64	25,033	9.61	4.53	
1964-65	30,108	12.45	5.50	Column 3: Total of figures as given at page 13-14 of APDK VI
1965-66	30,726	11.96	5.61	
1966-67	49,506	15.07	9.05	Column 4: Figures as given at item 14 Statement No.3 of Exhibit MRK 265.
1967-68	51,992	14.95	9.50	
1968-69	52,260	15.98	9.56	

It is clear from the above that the quantum of waters actually drawn at the border by Andhra Pradesh under the Rajolibunda Diversion Scheme Canal are much in excess of the actual requirement of the areas irrigated.

From the foregoing it is submitted that the State of Andhra Pradesh has no real grievance and the claim made in this behalf is therefore liable to be rejected.

VIJAYANAGAR CHANNELS.

10. With regard to the allegations made in paragraph III relating to the additional utilisations under Pre-Moghal channels (Vijayanagar Channels) in Mysore State, it is submitted as follows:

Vijayanagar Channels are old river channels

taking off from the Tungabhadra River and do not have regular control structures at their head for regulation of water into them. As such the quantity of water drawn by these various Channels, except in the case of Raya and Basavanna Channels which after the construction of the Tungabhadra Dam take off directly from the Tungabhadra Reservoir, are not measured or recorded.

11. The Vijayanagar Channels generally run very close to the river. These ancient channels were drawing supplies directly from the river and when the Tungabhadra Dam was constructed submerging the Hoskote and Vallabhapur anicuts from where the Raya and Basavanna Channels were taking off, provision was made for a sluice in the Tungabhadra Dam itself for withdrawal of water for the Raya and Basavanna Channels. The Tungabhadra Project sanctioned by the Government of Madras provides for drawing a discharge of about 400 cusecs relating to Raya and Basavanna Channels from the Tungabhadra Reservoir vide APPK 18 page 76 lines 17-24. The drawal of water into the Vijayanagar Channels has therefore to be understood with reference to the conditions existing prior to the construction of the Tungabhadra Project and cannot be compared with the discharges now worked out by adopting certain reasonable duties assumed by Mysore for ascertaining the requirements under these channels. The allegation that these utilisations are unauthorised or that there have been excess utilisations affecting the lower down irrigation interests in Andhra Pradesh is denied. On the Tungabhadra river below the Vijayanagar Channels, the only major

irrigation canals taking off are the Rajolibunda Canal and the Kurnool Cuddapah Canal. The irrigation under the Kurnool Cuddapah Canal has been on the increase year after year as indicated in the Rajoinder of Mysore to the supplemental pleadings of Andhra Pradesh (Vide C.M.P.16(38)/71-KWDT P.17-18). Under the Rajolibunda Diversion Scheme Canal the irrigation has not suffered as pointed earlier at para 9. This is a clear proof that the allegation of Andhra Pradesh is incorrect.

BELLA AND TURTHA CHANNELS

12. With regard to the allegations made in paragraphs III.2 and III.3 relating to the excess withdrawal under Bella Channel and Turtha Channel, it is submitted as follows:

The Bella and Turtha Channels are only 1½ miles and 10 miles respectively below the Tungabhadra Dam (MYPK 6 P.72). The main source of supply of water for these channels has to be the Tungabhadra Dam. It has been alleged that 200 cusecs of water are being released from the Tungabhadra Dam for the Bella Channel. This is not entirely correct as the water so released is not only used by the Bella Channel but also by the various other Vijayanagar Channels and the Kurnool Cuddapah

Canal. Further it may be mentioned that the Vijayanagar Channels are open mouthed channels and therefore it cannot be assumed and should not be assumed that the entire flows let down into the river are diverted into the Bella Channel.

13. It has been further alleged by Andhra Pradesh in paragraph II that Mysore State is drawing water from Gundalakerivanka for the Turtha Channel and that this is unauthorised. It is also further alleged that the Gundalakerivanka carries the discharge intended for the Krishna Delta. It is denied by Mysore that Gundalakerivanka carries the discharge intended for the Krishna Delta. The State of Mysore in its rejoinder to the supplemental pleadings of Andhra Pradesh vide CMP No.16(38)71-KWDT) has already contended that there is no such right or duty for contribution of water from the Tungabhadra Dam for Krishna Delta.

14. Mysore State is within its rights in utilising the waters flowing in the natural stream in their territory so long as it is within their equitable share. The State of Mysore has confined its claim under Vijayanagar Channels to an utilisation of 13.70 TMCft and so long as it is within its share, the complaint of Andhra Pradesh that the utilisations are unauthorised and they are affected thereby is wholly untenable.

RAYA & BASAVANNA CHANNELS.

15. Regarding the further allegations in paragraph III.1 relating to excess withdrawals under Raya and Basavanna Channels, the State of Mysore submits as follows:

The Raya and Basavanna Channels were originally taking off from the Hoskote and Vallabhapur anicuts, which were submerged by the construction of Tungabhadra Dam. It is seen from APPK 18, page 76 lines 17-24, that a sluice of one vent has been provided in the Tungabhadra Dam for supplying water to the existing irrigation. "This is designed to discharge about 375 to 400 cusecs which is the normal discharge now drawn by both the Basavanna and Raya Channels to command 7,500 acres. These channels work at very low duties by long established usage and custom."

16. Since all the Vijayanagar Channels are old and open mouthed channels without any suitable regulatory arrangements, the exact quantity of water drawn by them cannot be ascertained. It was, therefore, indicated by the State of Mysore that the total requirements under these channels would be 13.70 TMCft. These ancient channels have been drawing water as per age-long usage and most of the water drawn is returned to the river by seepage and wastage.

17. It is further submitted that the current meter gaugings conducted and referred to in the letter dated 17-11-1971, from the Superintending Engineer, Tungabhadra Board vide page 23 of the supplemental

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pleadings of Andhra Pradesh were not in consultation with the State of Mysore and their accuracy is not acceptable. The complaint of Andhra Pradesh without proper verification by both the States is not correct.

18. It has been alleged by the State of Andhra Pradesh that the State of Mysore is drawing additional discharges for the Raya and Basavanna channels from the outlets at Mile 7/6 and Mile 9/6 of the 'Power Canal'. The State of Mysore denies the allegation. It is submitted that these outlets in the 'Power Canal' have been provided by the Government of Madras. These outlets are under the control of the Tungabhadra Board and are operated by the Tungabhadra Board and not by Mysore State. The allegation therefore that Mysore is unauthorisedly drawing additional water is denied.

19. The State of Mysore further submits that such allegations regarding unauthorised drawal of waters are baseless and do not form part of any of the issues before this Tribunal and therefore are irrelevant. Any complaint by any State relating to the utilisations by another State can only be made if such utilisations are in excess of that State's equitable share. It is for this Hon'ble Tribunal by its award to make such allocations and to indicate the manner and the method as to how such utilisations can be ensured and regulated. Such regulations and controls for ensuring proper utilisation will necessarily be not only at Tungabhadra Dam but also at all points of such diversions in Maharashtra, Mysore and Andhra Pradesh. Therefore the present allegations and reliefs made by Andhra Pradesh are denied.

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TUNGABHADRA LEFT BANK HIGH LEVEL CANAL.

20. With regard to the allegations in paragraph IV relating to unaccounted utilisation by State of Mysore under the Tungabhadra Project Left Bank High Level Canal, the State of Mysore submits as follows:

The Left Bank High Level Canal is a part of the Tungabhadra Left Bank Canal project sanctioned by the Government of Hyderabad (vide MYDK-8, page 34). No separate quantum of water has been claimed by the State of Mysore for this canal and the claim will form part of the utilisations claimed under the Left Bank Main Canal. The apprehension of Andhra Pradesh regarding the drawing of additional supplies under the Left Bank High Level Canal is baseless.

LIFT IRRIGATION FROM THE FORESHORE OF THE TUNGABHADRA RESERVOIR.

21. It is alleged by the State of Andhra Pradesh in Para II at page 4 that the State of Mysore has some Lift Irrigation Schemes on the foreshore of the Tungabhadra Reservoir and that such schemes are affecting the irrigation at and below Tungabhadra Dam and also reduce the life of the Reservoir by silting. It has been suggested by the State of Andhra Pradesh that the foreshore Lift Irrigation should be stopped forthwith.

22. Even though this allegation and request has been made, no specific prayer has been made regarding this item by the State of Andhra Pradesh.

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23. There are a few Lift Irrigation Schemes taken up in Mysore State. But the utilisations under such schemes is negligible and these schemes come under Minor Irrigation Works. The allegation made regarding the Reservoir getting silted up due to such Lift Irrigation Schemes is wholly incorrect and is denied. The waters of any river are used primarily for irrigation and if the contention of the State of Andhra Pradesh were to be accepted, no irrigation above a Reservoir could ever be permitted. Just as the State of Andhra Pradesh has set up a number of Lift Irrigation schemes on the Tungabhadra river below Rajolibunda Diversion Scheme Anicut in Andhra Pradesh, the State of Mysore too has taken up Lift Irrigation schemes on the banks of Tungabhadra river. The State of Andhra Pradesh cannot ask for stoppage of all such schemes and it has no right to make such a request unless it can prove that its existing irrigation has been affected and that such utilisation of waters is beyond the equitable share of waters in Tungabhadra which is to be determined by this Hon'ble Tribunal. The allegation is therefore denied.

TUNGABHADRA PROJECT LEFT BANK CANAL - EXTENSION TO ALAMPUR AND GADWAL TALUKS.

24. With regard to the allegations in paragraph V relating to the extension of Tungabhadra Project Left Bank Canal to Alampur and Gadwal taluks in Andhra Pradesh, the State of Mysore submits the following:

The State of Andhra Pradesh has prayed that the Hon'ble Tribunal may declare that the Tungabhadra Project taken on hand prior to November 1956, included the supply of 19.2 TMCft of water for irrigating areas in Gadwal and Alampur taluks under the Left Bank Canal and include the same in the share of the State of Andhra Pradesh and give such other or further appropriate direction in this regard.

25. It is submitted that this claim of Andhra Pradesh for supply of water from the Left Bank Canal of Tungabhadra to areas in Andhra Pradesh has already been denied in the Rejoinder of Mysore State to the Statement of Case and to the supplemental pleadings of Andhra Pradesh vide MYK III and CMP 16(38)/71-KWDT. No new grounds have been made out by Andhra Pradesh in their present pleadings and the various grounds already traversed in the rejoinder may be read as part of this statement.

26. The State of Andhra Pradesh has sought to draw an inference from circumstances set out at pages 11 and 12 to justify their claim. These inferences are wholly wrong and they are denied. The State of Andhra Pradesh has sought to make out that the vent-way of the bridge on the canal in Mile 124, constructed by the erstwhile State of Hyderabad, indicates that it was designed to serve the areas of Gadwal and Alampur taluks now in Andhra Pradesh. It is submitted that the design of the vent-way of the bridge in mile 124 of the canal has no relation whatsoever with the claim made by Andhra Pradesh. The canal upto

mile 127 from mile 16 was designed as a navigable canal (MYDK 8, p.17, line 26). There was no sanctioned scheme before the Government of erstwhile Hyderabad for irrigating lands in Alampur and Gadwal taluks beyond mile 141 of the Left Bank Canal vide letter of 27-8-1955 of the Secretary to Government of Hyderabad, Public Works Department, addressed to Chief Engineer, I.P., Hyderabad, at page 10 of MYDK 20. It is submitted that the Government of Hyderabad had not sanctioned any detailed estimates for the construction of the canal beyond mile 127. This branch canal has therefore been designed and constructed by the State of Mysore after detailed investigations to feed the area in this reach. The allegation that the alignment of the canal beyond mile 127 was changed by the State of Mysore is therefore baseless in as much as the detailed plans and estimates for the canal in this reach had not been sanctioned by the Government of Hyderabad. It is submitted therefore that the question of furnishing the details of the canal as made out by Andhra Pradesh does not arise and their claim for 19.2 TMcft of water from the Left Bank Canal is baseless and is denied.

27. With regard to the allegation at page 12 relating to the map of the Tungabhadra Project kept in the model room under the control of the Tungabhadra Board on the right flank of Tungabhadra Dam, the State of Mysore submits as follows:

There has been no sanctioned scheme by the erstwhile Government of Hyderabad for constructing

the canal beyond mile 141. It is already submitted that the sanctioned scheme as at MYDK 8 does not support the contention of Andhra Pradesh. The map kept in the model room cannot be used in assistance of their argument as the sanctioned report is against such contentions of Andhra Pradesh. The allegation is denied and has to be rejected.

28. It is also alleged by the State of Andhra Pradesh that there are four penstocks installed in the Tungabhadra Dam on the left side and that one penstock had been blocked and that as against the original provision of four generating units only three units have been installed. No specific relief or prayer has been made in this regard by Andhra Pradesh. It is, however, submitted that the claim of Andhra Pradesh for a share of power from the Left Bank Power House has already been dealt with in detail in Rejoinders of Mysore State to supplemental pleadings of Andhra Pradesh vide CMPs. No.16(38)/71-KWDT and 16(18)/71-KWDT. It has already been denied that Andhra Pradesh is entitled to any share of power from the Left Bank Power House.

NON-PROVISION OF RIVER SLUICES IN PROJECTS IN UPPER STATES.

29. With regard to the allegations made in paragraph VI relating to the non-provision of river sluices in projects in upper States, the State of Mysore submits as follows:

It has been prayed by the State of Andhra Pradesh that the Hon'ble Tribunal may direct the States of Maharashtra and Mysore to provide adequate river sluices in all dams and anicuts in those States to ensure timely supplies to the State of Andhra Pradesh. In the matter of allocation of waters of inter-State rivers between the States, this Hon'ble Tribunal has to make an allocation having regard to all circumstances relevant to such allocation and it is for this Hon'ble Tribunal to give such directions as are necessary by way of regulation or otherwise to ensure the proper working of the allocation so made. It is denied that such regulation to ensure proper working of the allocated waters could only be by constructing river sluices. It is submitted that water from a reservoir can be released into the river through a canal, through the power turbines as well as through the spillway. Subject to such regulation or restriction as may be given by this Hon'ble Tribunal it is for each State to adjust its utilisations out of its equitable share of waters. The requirements of irrigation in Andhra Pradesh will have to be regulated by it from the reservoirs available in its own State. The need for supply of any plans or maps therefore to Andhra Pradesh does not arise.

ADVOCATE
FOR THE STATE OF MYSORE.

Dated 28th Jany.1972,
New Delhi.

ANNEXURE

DETAILS OF LIFT IRRIGATION SCHEMES ON RAJOLIBUNDA DIVERSION SCHEME CANAL IN MYSORE STATE.

Sl. No.	Name of the scheme.		Area irrigated in acres.
1. Scheme	Lift Irrigation Scheme at Rajolibunda Diversion Canal, chainage 676 at Gillesugur village, Raichur District.	Kharif	150
		Rabi	100
		Total	250
2.	Lift Irrigation Scheme at Rajolibunda Diversion scheme Canal, chainage 234 at Rajoli village, Raichur District.	Kharif	240
		Rabi	144
		Total.	384

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VRM/GS
10.45 a.m. to
11.00 a.m.

5th January 1972.

KRISHNA WATER DISPUTE TRIBUNAL

Deposition of MY.W. 1

Name of Witness :	Mr.Basawaraj Chanavirappa Angadi
Father's name:	Mr. Chanavirappa Angadi
Age:	48 years and 11 months.
Full Address:	Chief Engineer, W.R.D.O., No.33, 8th Cross, Vasantanagar, Bangalore.
Occupation:	Chief Engineer, P.W.D., Govt. Service, Mysore State.

Examination-in-chief.

(by Mr. T. Krishna Rao, Advocate for the State of Mysore.)

Q .1 : Mr. Angadi, what are you and what are your qualifications ? Please tell the Tribunal .

A. 1 At present, I am Chief Engineer, Water Resources Development Organisation in the Public Works Department of the Government of Mysore. I have passed my B.E. (Civil) Examination in the year 1946 from the University of Bombay. Then, speaking for my further academic qualification,

I add that I was deputed to the United Kingdom for higher studies in Soil Mechanics and Foundation Engineering at the Imperial College of Science and Technology, London, in the year 1961. I have been awarded the D.I.C. (London), that is to say, the post-graduate Diploma of the Imperial College of Science and Technology, London, I am a Member of the Institution of Engineers(India).

I have been exercising the full powers and responsibilities of Chief Engineer, Government of Mysore in the Water Resources Development Organisation of the Public Works Department since February 1970. My designation till July 1971 was Director, Water Resources Development Organisation and thereafter I have been designated as Director/ Chief Engineer, Water Resources Development Organisation.

Q 2: Have you any experience of fixing storage capacities of river valley projects ?

A 2: Yes, Sir. I have been associated with studies relating to the investigations, planning and design as well as construction of minor, medium and major river valley projects from the beginning of my service.

As Executive Engineer, in the Bombay State, until Reorganisation of States in the year 1956, I had occasion to study the Ghatprabha Valley Development Scheme and thereafter since the transfer of my services to the State of Mysore after 1st November 1956, in my capacity as Superintending Engineer (Designs and Planning) and also as Director, Water Resources Development Organisation, and subsequently as Chief Engineer, W.R.D.O., I have been closely associated with the studies and designs of storage capacities of a number of major irrigation projects in all over the State of Mysore in the Krishna, the Godavari, and the Kaveri basins. Among the major projects, I have had oaccasion to deal with, I mention, the Upper Krishna Project, the Malaprabha Project, the Ghatprabha Project, the Upper Tunga Project and the Upper Bhadra Project.

Q 3: Will you please explain the concept of carry-over storage ?

A 3: Yes, Sir. Before I proceed to explain what the concept of carry-over storages means, I will first explain what an ordinary or just a storage in a river valley development scheme means.

Answer continues:

For this purpose I have prepared a monthly flow hydrograph which also shows the monthly utilisations. The years I have chosen for the purpose of explaining this concept are the year of dependable flows of the Krishna River System with a total annual flow of 2176 Tmc at 75% dependability and another year viz., the year 1916-17 with a total annual flow of 3927 Tmc. I have got the flow hydrograph prepared under my personal supervision and I vouch for its accuracy.

(Witness hands over a flow hydrograph prepared by him for incorporation in his evidence).

The hydrograph shows the mean flows in cubic feet per second as ordinates as also the utilisations or withdrawals as ordinates. On the ax abscissa is shown time in months of the water year to a suitable scale. The hydrograph of the 75% dependable flow is shown in thick blue lines. It is seen that the mean flow in the month of June is about 38,000 Cft per second. It rises to 1,44,000 cusecs mean discharge during the month of July, then rising suddenly to a peak value of 2,44,000 cusecs in the month of September. It may be noticed that the mean discharge suddenly slumps in October to about 94,000 cusecs tapering ultimately abxux to a mere about 4,000 cusecs mean.

Supposing that there were to be no storages whatsoever in the river system and all diversions for irrigation and other consumptive uses were to take place entirely by means of diversion structures only, it will be at once clear from the hydrographs that for kharif irrigation commencing in June and ending say by November of the

year the maximum rate of withdrawal could not be more than 38,000 cusecs and from November onwards till the end of May i.e., for Rabi and hot weather irrigation, the discharges are seriously curtailed and restricted strictly to the flows available. The total utilisations by such diversion works would be limited to that part of the hydrograph which is shown in blue hatches. If irrigation withdrawals were to be made on the basis of the mean discharge available in the month of July that is to say 1,44,000 cusecs, you will notice from the hydrograph that such a manner of withdrawal for irrigation will not be possible because that rate of withdrawal will be available only during three months viz., July, August and September.

A kharif crop cannot be matured in such a short time as the base period for most of the Kharif crops such as Paddy, even light seasonals, etc.is about 120 days and even longer in the case of long-term varieties of paddy.

The total quantity of utilisations orwithdravals that would be possible with only diversion works without being backed by adequate storages would be equal to only 711 Tmc which is the total of all the utilisations of 12 months as shown in hatched portions.

This will make it immediately clear that during that year considered by me for this h drograph there will be an unutilised quantity of water equal to 2176 Tmc minus 711 Tmc, equal to 1465 Tmc which is nearly or even more than double the quantity that you are able to use.

Therefore, it becomes xx evident that if such a large quantity of water is not to be wasted it must of necessity be conserved in reservoirs of adequate capacity and, in a river system like the Krishna, which receives its flows chiefly seasonally, viz., under the dominant influence of South-West monsoon, such (~~storages to hold the~~) large discharges during those few days, or four or five months of the year, must be conserved in reservoirs so that they could be used during the other months of the year These storages are called conservation storages.

In the case I have taken for elucidation. if the surplus flows of 1465 Tmc are conserved. one of the possible ways of utilising the entire flows of the river is shown in red lines. You will see here that the discharges have considerably improved. The red lines are based on my rough assessment of the withdrawals of all the projects of all the States in the basin now existing and proposed for utilising the entire yeield of 2176 Tmc. This manner

of utilisation is my own assessment on the assumption that the entire yield of the dependable year, namely 2176 TMC would be fully utilised and this particular manner of withdrawal is only for the purpose of elucidating the principle of carry-over studies. This total quantity of 2176 TMC would be utilised in the course of the same water year.

I now draw attention to the monthly hydrograph of the year 1916-17 which can be seen in dotted yellow lines. This year, I have chosen as the maximum yield for the Krishna river system, namely 3927 TMC. It is seen from the hydrograph that there is an area between the yellow dotted lines and the thick blue lines showing the hydrograph of the dependable year which represents a quantity equal to 3927 TMC minus 2176 TMC, which is equal to 1751 TMC.

It is seen here that even after providing a conservation storage of 1465 TMC there would still be a surplus in a good year like 1916-17. A very large quantity of water will have to be wasted. It must be remembered that surpluses ranging from a small to a high extent take place in 74 years out of ~~every~~ 100 years if irrigation planning is done on the basis of 75% dependable yields as considered for the purpose of this hydrograph. This immediately suggests that such surplus waters should be put to use to the extent possible by further storage capacities in the river system and such storages, in order to hold and make use of such surpluses, are termed as " carry-over storages " by Engineers.

Now, I will draw attention to a Bar-chart. This Bar-chart has been got prepared under my supervision and I vouch for its accuracy.

(Witness hands over a copy of the Bar-chart for incorporation in evidence).

In diagram 1 are shown by means of vertical bars the annual flows of the Krishna river system from the year 1900-01 to the year 1950-51 - in all a series of 51 years. The flows I have represented are the total virgin yields of the river system each year. I have drawn a green horizontal line representing 2176 T.M.C. The ordinates of diagram 1 show the inflows in T.M.C. at Vijayawada and on the horizontal lines, as already explained, are represented years. If utilisations were to be planned at 75% dependability, it is noticed from diagram 1 that wastages take place in (25% of the lean) years. Such wastages are shown in blue colour on the bar-chart protruding above the dependable yield line shown in green.

I now draw attention to diagram 2 of the bar-chart which shows the same flow data as in diagram 1, so far as the annual yields are concerned. I have drawn a horizontal green line which represents 2176 T.M.C. and a red line above it which represents a utilisation of 2406 T.M.C. and then I have also shown a horizontal line in blue colour which

represents a flow of 2689 T.M.C., that is to say, 283 T.M.C. more than 2406 T.M.C.

I will now explain diagram 11.

In the year 1900-01, the total annual yield is 3072 T.M.C.

Answer continues:

This means during this year, there is a surplus quantity over and above the 75% dependable quantity of 2176 TMCft. equal to 896 TMCft. (3072 - 2176). By a number of trials which I made, looking at such surpluses occurring in 74% years in these series I have fixed a modified higher figure of annual utilisation of 2406 TMCft. as capable of being achieved by means of carryover of part of the surplus quantity. This total surplus quantity above 2406 TMCft. is 3072 - 2406 = 666 TMCft. I found from a number of trials that if I provide a carryover capacity in the entire river system equal to 283 TMCft. over and above the capacities normally required to utilise 2406 TMCft., it would be possible to carry from the year 1900-1901 the full quantity of 283 TMCft. out of 666 TMCft. otherwise wasting. I shall explain presently why I have chosen the extra capacity i.e., the carryover capacity of 283 TMCft. ~~By making use of this carryover capacity~~, you will see, for the year 1900-01 that out of the surplus of 666 TMCft. which

will otherwise waste, I am holding 283 TMCft. in the carryover reservoirs and passing it over for use during 1901-02 and 1902-03.

Q:4 (By Chairman) Do I understand, Mr. Angadi, that according to your studies 283 TMCft. is the maximum carryover storage possible in the Krishna basin?

A:4 The trial studies, several of which I have made, indicated that for the flow data of 51 years such as we have at Vijayawada, with a carryover capacity of 283 TMCft, it would become possible to utilise 2406 TMCft.

Q:5 (By Chairman) Do I understand that according to your studies 283 TMCft. is the maximum carryover storage possible in the Krishna basin. That is the question I have asked.

A:5 My studies reveal that advantages by carryover would accrue to a substantial extent upto a carryover capacity of 283 TMCft. Theoretically it is possible to provide even further carryover capacities and get further advantages therefrom but such advantages will be disproportionately small.

Q:6 (By Chairman) Do I understand that for all practical purposes 283 TMCft. is the maximum possible carryover storage in the entire Krishna basin?

A:6 In my opinion yes. ~~[over and above the capacity required for utilisation of 3406 TMCft.]~~

A number of trial studies as I have told earlier had to be made to ~~fetch~~ arrive at this figure of 283 TMC for deriving the maximum advantage. Trial studies are necessary because there are three independent variables simultaneously varying, namely the carry-over capacity, the utilisations and the percentage dependability of that utilisation. Unless trials ~~and errors~~ are made it is not possible to fix the optimal values for all these three simultaneously variable figures.

(Examination-in-chief continues)

Q: 7 Mr. Angadi, have you made a study with regard to Krishna system as to the benefits that may be conferred from the carry-over studies and is that study in writing?

A: 7 Yes. This is a written study which I have got prepared under my supervision and about the accuracy of which I vouch.

STATEMENT NO.1

Statement of annual gross utilisation of 2406 TMC with a carryover of 283 TMC. The additional utilisation will be 2406-2176=230 TMC (All figures in TMC).

Sl. No.	Year	Gross flow at Vijaya-wada	Carry over from last year	Total	Utilisation planned in Krishna Basin.	Available surplus Total/ Net.	Carry over to next year.	Sur-plus
1	2	3	4	5	6	7	8	9
1.	1900-01	3072	-	3072	2406	666/599	283	316
2.	1901-02	2187	283	2470	2406	64/58	58	-
3.	1902-03	1994	58	2052	2052	-	-	-
4.	1903-04	3325	-	3325	2406	919/827	283	544
5.	1904-05	1835	283	2118	2118	-	-	-
6.	1905-06	1335	-	1335	1335	-	-	-
7.	1906-07	2006	-	2006	2006	-	-	-
8.	1907-08	2496	-	2496	2496	90/81	81	-
9.	1908-09	2673	81	2754	2406	348/313	283	30
10.	1909-10	2304	283	2587	2406	181/163	163	-
11.	1910-11	2606	163	2769	2406	363/327	283	44
12.	1911-12	1529	283	1812	1812	-	-	-
13.	1912-13	2264	-	2264	2264	-	-	-
14.	1913-14	1926	-	1926	1926	-	-	-
15.	1914-15	3334	-	3334	2406	928/835	283	552
16.	1915-16	2517	283	2800	2406	394/355	283	72
17.	1916-17	3927	283	4210	2406	1804/1624	283	1341
18.	1917-18	3212	283	3495	2406	1089/980	283	697
19.	1918-19	1105	283	1388	1388	-	-	-
20.	1919-20	2491	-	2491	2406	85/78	78	-
21.	1920-21	1792	78	1870	1870	-	-	-
22.	1921-22	2300	-	2300	2300	-	-	-
23.	1922-23	2199	-	2199	2199	-	-	-
24.	1923-24	2603	-	2603	2406	197/177	177	-
25.	1924-25	2470	177	2647	2406	241/217	217	-
26.	1925-26	2628	217	2845	2406	439/395	283	112
27.	1926-27	2414	283	2697	2406	291/262	262	-

contd...2)

1	2	3	4	5	6	7	8	9
28.	1927-28	2556	262	2818	2406	412/371	283	88
29.	1928-29	2457	283	2740	2406	334/301	283	18
30.	1929-30	2124	283	2407	2406	1/1	1	-
31.	1930-31	2430	1	2431	2406	25/22	22	-
32.	1931-32	3231	22	3253	2406	847/762	283	479
33.	1932-33	3060	283	3343	2406	937/843	283	560
34.	1933-34	3366	283	3649	2406	1243/1119	283	836
35.	1934-35	2425	283	2708	2406	302/272	272	-
36.	1935-36	2162	272	2434	2406	28/25	25	-
37.	1936-37	2056	25	2081	2081	-	-	-
38.	1937-38	2246	-	2246	2246	-	-	-
39.	1938-39	2792	-	2792	2406	386/347	283	64
40.	1939-40	2382	283	2665	2406	259/233	233	-
41.	1940-41	2470	233	2703	2406	297/267	267	-
42.	1941-42	1906	267	2173	2173	-	-	-
43.	1942-43	2424	-	2424	2406	18/16	16	-
44.	1943-44	2704	16	2720	2406	316/284	283	1
45.	1944-45	2417	283	2700	2406	294/265	265	-
46.	1945-46	2156	265	2421	2406	15/14	14	-
47.	1946-47	3114	14	3128	2406	722/650	283	367
48.	1947-48	2803	283	3086	2406	280/612	283	329
49.	1948-49	2571	283	2854	2406	448/403	283	120
50.	1949-50	2820	283	3103	2406	697/627	283	344
51.	1950-51	2893	283	3176	2406	770/693	283	410

Results: 2406 TMC can be utilised in 37 years out of 51 years.
The utilisation in the 38th year i.e. 1921-22 is 2300 TMC.
Total utilisation in 51 years = 1,16,792 TMC.
Total surplus in 51 years = 7,323 TMC.

Note: Col.3 - Figures are the same as given in Col.No.3 in page 489 of the deposition by the witness of Maharashtra.

Col.7: Surplus flow available- Numerator showing the gross available surplus and the denominator the net available surplus after deducting 10 percent losses.

STATEMENT NO. 2

Statement giving the details of the carryover studies in the Krishna Basin as a whole for the period 1900-01 to 1950-51.

Sl. No.	Annual utilisation TMC.	Carryover proposed TMC.	Dependability %age.	Total utilisation in 51 years TMC.	Spill to sea in 51 years in TMC.
1.	2176	-	75	1,06,622	19,181
2.	2300	180	74.5	1,12,515	11,445
3.	2406	283	72.5	1,16,792	7,323

Statement No.3

Statement showing the years in which the utilisation have been improved to 2406 by providing the carryover in Krishna Basin.

Sl. No.	Year	Gross flow at Vijayawada (TMC)	Additional quantity available due to c/o.	
			(T.M.C.)	(%) of gross flow
1.	1909-10	2304	102	4.4
2.	1929-30	2124	282	13.2
3.	1935-36	2162	244	11.3
4.	1939-40	2382	24	1.0
5.	1945-46	2156	250	11.6

Statement No.4

Statement showing the years in which the utilisations are less than 2176 in Krishna basin even after improvement and the percentage of improvement in these years.

Sl. No.	Year	Gross flow at Vijayawada.	Additional quantity available due to C.O.	
			TMC.	% of gross flow.
1.	1902-03	1994	58	3.0
2.	1904-05	1835	283	15.5
3.	1911-12	1529	283	18.5
4.	1918-19	1105	283	25.7
5.	1920-21	1792	78	4.3
6.	1936-37	2056	25	1.2
7.	1941-42	1906	267	14.00

are less than 2176 in [illegible] even after improvement and the percentage of improvement in these years.

Sl. No.	Year	Gross flow at Vijayawada.	Additional quantity available due to C.O.	
			TMC.	% of gross flow.
1.	1902-03	1994	58	3.0
2.	1904-05	1835	283	15.5
3.	1911-12	1529	283	18.5
4.	1918-19	1105	283	25.7
5.	1920-21	1792	78	4.3
6.	1936-37	2056	25	1.2
7.	1941-42	1906	267	14.00

LV.

No.	Year	Gross flow at Watertown	Additional equipment available for O&O
1.	1802-03	1994	98
2.	1804-05	1835	263
3.	1811-12	1529	289
4.	1818-19	1105	283
5.	1822-23	1782	78
6.	1836-37	2066	25
7.	1841-42	1900	267

No.	Year	Gross flow at Watertown	Additional equipment available for O&O
1.	1802-03	1994	98
2.	1804-05	1835	263
3.	1811-12	1529	289
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5.	1822-23	1782	78
6.	1836-37	2066	25
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3.	1811-12	1529	289
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5.	1822-23	1782	78
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No.	Year	Gross flow at Watertown	Additional equipment available for O&O
1.	1802-03	1994	98
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3.	1811-12	1529	289
4.	1818-19	1105	283
5.	1822-23	1782	78
6.	1836-37	2066	25
7.	1841-42	1900	267

STATEMENT NO.6

Statement showing the deficit in utilisation in the Krishna Basin in the years of deficiency.

The annual utilisation considered is 2406 ± TMC.

Sl. No.	Year of deficiency.	Gross yield at Vijayawada (TMC)	Carry over from previous year TMC.	Total (TMC)	Deficit (TMC)	Deficit % on 2406
1	2	3	4	5	6	7
1.	1902-03	1994	58	2052	354	14.6
2.	1904-05	1835	283	2118	288	11.9
3.	1905-06	1335	-	1335	1071	44.5
4.	1906-07	2006	-	2006	400	16.6
5.	1911-12	1529	283	1812	594	24.6
6.	1912-13	2264	-	2264	142	5.9
7.	1913-14	1926	-	1926	480	19.9
8.	1918-19	1105	283	1388	1018	42.2
9.	1920-21	1792	78	1870	536	22.3
10.	1921-22	2300	-	2300	106	4.4
11.	1922-23	2199	-	2199	207	8.6
12.	1936-37	2056	25	2081	325	13.5
13.	1937-38	2246	-	2246	160	6.6
14.	1941-42	1906	267	2173	233	9.7

NOTE:
1. The figures in col.No.3 are the same as in col.No.3 of statement No.1 at page No.489 of the deposition of the witness of Maharashtra.
2. The figures in col.No.6 are the difference between 2406 and the figures in col.No.5.
3. The figures in col.No.7 are the percentages which the figures in col.No.6 bear to col.No.5.

RESULT: Out of the 14 deficient years, the following are the degree of deficiency compared to 2406 TMC.

1. In 5 years the deficiency is less than 10 per cent.
2. In 3 years the deficiency is less than 15 per cent.
3. In 2 years the deficiency is less than 20 per cent.
4. In only 4 years the deficiency is more than 20 per cent.

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L.V.

Q 8: Can you explain to the Tribunal the statements that you have prepared?

A 8: I have noticed that in a period of 51 years from 1900-01 to 1950-51, there will be a very large surplus which is going waste, if we plan utilisation of the Krishna River system considered as a whole for 2176 TMC at 75 % dependability. Therefore, I got made, under my personal supervision, a number of trial studies relating to carry-over capacity, total benefits and the percentage dependability of that benefit. As a result of these studies, I came to the conclusion that by the best combination of these three variables, namely, the carry-over capacity, the total utilisations as a result of it and its dependability, and by providing 283 TMC of carry-over capacity it will be possible to increase annual utilisations to 2406 TMC that is to say, by providing 103 TMC more of carry-over capacity than what I have found exists in the Srisailam and Nagarjunasagar reservoirs, namely, 180 TMC.

Q 9: (By Chairman) What happens if you attempt to provide a carry-over storage of more than 283 TMC?

A 9: I have made attempts to see whether increased benefits are possible by increasing

the carry-over capacity beyond 283 TMC but my studies indicate that there will be no substantial proportionate increase.

By increasing the carry-over capacity what happens is the increase beyond 2406 TMC will be in the first place very marginal and it will be not of any reliable dependability. In other words, ~~if~~ 2406 TMC have now become available or possible by means of carry-over of 283 TMC in 37 years out of 51 years, that is to say, at 72.5% dependability with the 38th year bringing in utilisation of 2300 TMC.

Q 10: (By Chairman) Do I understand that ~~if~~ with the carry-over storage of 283 TMC you can have a 72.5% dependable flow of 2406 TMC?

A 10: Yes.

Q 11: (By Chairman) Do I understand that if you have a carry-over of more than 283 TMC you will not be able to get 72.5% dependable flow ~~or~~ & more than 2406 TMC?

A 11: Yes, Sir.

(Examination-in-chief continued)

Now, I will explain this yearly working table in Statement No.1. In Statement No.1, Column 2 shows the years of the 51-year series chronologically. Column 3 shows the gross flows at Vijayawada, Column 4 the carry-over to that year from the previous year.

Column 5 indicates the total availability during that year including carry-over. Column 6 indicates utilisations which can be planned in the Krishna basin at 72.5% dependability. Column 7 shows the gross and net surpluses allowing for losses and Column 8 indicates the carry-over capacity and the carry-over storage available in that year and Column 9 indicates the clear surplus at Vijayawada for the entire system.

Q 12: (By Chairman) For the purpose of carry-over of 283 TMC in Krishna at what points of the river you have the carry-over storage? Have you made any study on this point?

A 12: Yes Sir. As I have already explained, there is already a carry-over capacity of 180 TMC in the Srisailam and Nagarjunasagar reservoirs. The remaining carry-over capacity is also available in the higherup reaches of the Krishna basin upstream of Srisailam reservoir.

Q 13: (By Chairman) My question was to get this 283 TMC at what points of the Krishna Basin would you have. Carry over storages.

A 13: The points at which such carry-over storages could be constructed are the Almatti dam site of Upper Tunga Krishna Project, the Malathi reservoir of the Upper Tunga Project and Mahagundi dam of the Upper Bhadra Project and some capacity also in the Bhadra Project at Lakkavalli. A rough analysis and my personal knowledge of these project sites clearly indicates to me a possibility of providing some capacity. Carryover at ~~at Lakkavalli also exists.~~ dam site.

Chief-examination continues:

I have already explained graphically the contents of s$tatement No.1 earlier. Now I shall briefly explain statement No.1 for a few years. It is noticed that for the year 1900-01 there will be a net surplus after meeting the full demands of 2406 TMC during that year equal to 599 TMC. I carry-over 283 TMC of this surplus to the year 1901-02 which I have shown in column 4. As a result of this, the total water available during that year becomes 2470 TMC as shown in column 5. Out of this, the full utilisation of 2406 TMC is provided during that year and a net surplus of 58 TMC will be still available for use as carry-over during the year 1902-03 which I have shown in column 4 against that year. The study is repeated in similar manner for all other years. The results of this study are as follows:- (Vide Statement No.2).

If planning had been done at 2176 TMC, without any carry-over capacity at 75% dependability, the total utilisations of the

entire river system in a period of 51 years would have been only 1,06,622 TMC, thereby wasting 19,181 TMC during the same period; whereas if planning is done on the basis of annual utilisation of 2300 TMC with a carry-over capacity of 180 TMC at 74.5% dependability, the total utilisation during the 51 years period would have been increased to 1,12,515 TMC still wasting 11,445 TMC.

But if planning is done on the basis of annual utilisation of 2406 TMC, with a carry-over capacity of 283 TMC, the total utilisations at 72.5% dependability during the 51 years period would increase to 1,16,792 TMC, causing a surplus of 7,323 TMC for the entire system. I will explain why a surplus of 7,323 TMC still occurs in spite of the planning I have indicated. Please see Statement No.1. Against column 9 you see the surpluses. These surpluses in the first place, atleast some of them, are very freak and very large. For instance, there is a surplus of 1,341 TMC.

during the year 1916-17 which represents nearly 17 to 18 per cent of the total 51 years surplus in one year alone. Similarly there are other high surplus years like 1933-34 with a surplus of 836 TMC and there are four years with a surplus of more than 500 TMC. Such surpluses occuring once or twice or in 1% or 4% of the years, ~~are~~ or slightly smaller surpluses occuring in about 10 to 12 percent of the years cannot be economically held and released for utilisations at any high dependability. But it cannot be ruled out that as demand for water increases even such flows, in the remote future, could be used for some purposes.

Now I will explain statement No.3. I explained that 37 years get the full annual utilisation of 2406 TMC and one year gets 2300 TMC. There would thus be 13 years which will not get the required utilisation of 2406 TMC.

In Statement No.3 I have shown years in which the utilisation has been improved to 2406 TMC by the help of carry-overs. Those are the 5 years which got the benefit varying from a maximum of 282 TMC to a minimum of 24 TMC in the process of lifting them to dependable years.

In Statement No.4 I have shown years in which utilisations are less than 2176 TMC even after improvement. The additional advantage these seven years got as a result of the carry-over is shown in column 4. Three years got the full advantage of 283 TMC while the others got advantages varying from 267 to 25 TMC. The percentages of this benefit are indicated in the last column.

Statement No.5 indicates the deficits in utilisations in the Krishna basin in the years of deficiency. To sum up, in five deficient years the deficiency is less than 10%; in three such years it is less than 15 per cent; in two years it is less than 20 per cent and in only four years out of the 51 years the deficiency is more than 20 per cent.

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Q 14: (By Chairman) Your charts and statements are based on theoretical studies. If you put this theoretical study into actual execution, do you find any practical difficulty?

A 14: No, Sir. I should think it should be quite possible to put these studies into actual practice.

Q 15: (By Chairman) The first practical difficulty is the difficulty of economics, in other words the cost, and the benefit to be derived. Isn't that so?

A 15: In fact, all storages including carry-over storages are governed by considerations of economics apart from technical feasibility. But, in the case of the Krishna river system, no such difficulty, in my opinion, on either ground will arise.

Q 16: (By Chairman: In actual practice, is there a carry-over storage now in Mysore?

A 16: As I explained earlier, there is some carry-over capacity available in the Lakkavalli reservoir of the Bhadra Project.

Q 17: (By Chairman) What is the extent of the carry-over at Lakkavalli.

A 17: I have not made a detailed analysis.

Q 18: (By Chairman) Nobody knows what is the extent of the carry-over at Lakkavalli?

A 18: At the moment, yes Sir.

Q 19: (By Chairman) Do I take it there is no carry-over storage at any other place in Mysore at present?

A 19: Yes, Sir.

Q 20: (By Chairman) Have you personally designed any carry-over storage so far?

A 20: I have, in the course of dealing with the Upper Krishna Project, made a study of the possibility of carry-over capacity for that project.

4

Q 21 (By Chairman) Have you personally designed any project in which there is a carry-over storage.

A 21: Not any of them now under construction.

Q 22 (By Chairman) Take the case of the multipurpose project from which water has to be released for purposes of irrigation and power. Would the requirement of such releases in any way affect the theoretical carry-over of the storage in that reservoir?

A 22: In my opinion, regulation can be so adjusted without affecting, in any manner, the efficiency of the advantage of carry-over.

Q 23: (By Chairman) Do I take it that in a carry-over storage there would be more evaporation.

A 23: There will be proportionately more evaporation to the extent of the extra capacity.

K. G. Unit

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(Witness on his former oath)

Witness volunteers :--

On page 3 in the 7th line from the top after the word " as " add the words " Superintending Engineer, Upper Krishna Project Circle and later as Superintending Engineer, Ghataprabha Project Circle and ".

On page 28, in the last but one line, add the word " carry-over " between the words " sc " and " capacity " and then put a full-stop and make " at " as capital "At" and after the word " also " add the words " some carry-over capacity ".

Mr. T.Krishna Rao closes his examination-in-chief.

The learned Advocate General of Maharashtra states that he will not cross-examine the witness.

Cross-examination by Mr. Pasha on behalf of the State of Andhra Pradesh.

Q. 24: Mr. Angadi, where did you work as Executive Engineer within Bombay State prior to 1-11-1956?

A. 24: I worked as Executive Engineer, Hadalga Dam Division of the Ghataprabha Valley Development Scheme just prior to the Reorganisation of States.

Q. 25: Was any carry-over study made by you in relation to the Ghataprabha Project?

A. 25: No.

Q. 26: Please see page 3 of your deposition. You have stated that " I have been closely associated with the studies and designs of storage capacities of a number of major irrigation projects all over the State of Mysore in the Krishna, the Godavari, and the Kaveri basins." Can you tell us the approximate proportion of live storage capacity of a reservoir to the utilisation in some of the reservoirs with whose designing you have been associated?

Answer: 26 It is not possible to give an exact figure representing the ratio of storage to the utilisation under projects. This proportion, in other words, is not an unique figure for all ~~purposes~~ projects. For fixing the storage capacity of a reservoir, we must first know the ~~purpose~~ namely whether it is for irrigation or for power or for industrial and Municipal water supplies. Secondly, the designer should also know what the use rate of the different utility ie is. The proportion is in each case a function of the rate of utilities and the rate of inflows. Therefore I cannot give any fixed proportion or any figure as a proportion of storage to utilisation.

Q. 27 Mr. Angadi, could you give me the name of any one of the projects ~~you have been closely associated with and designed~~ in respect of which you have been closely associated with the studies and designs of the storage capacities?

A: 27 Bhima irrigation project.

Q: 28 Now can you tell me the approximate proportion of the live storage capacity of the Bhima irrigation project to the utilisation?

A: 28 The approximate proportion is 0.6.

Q: 29 (By Chairman) Is there any published study on this point?

A: 29 We do not have a published study. They are projects still under examination.

Q: 30 (By Mr. Pasha) Is there any project under construction or in operation with whose design you have been closely associated?

A. 30 No.

Q: 31 (By Chairman) All the major irrigation projects to which you referred at page 3 of your deposition are still under investigation?

A: 31 Yes.

Q: 32 (By Chairman) Have the studies and designs of storage capacities of such projects been published anywhere?

A: 32 I have been associated with the design as Superintending Engineer, Designs and later

as Chief Engineer, Water Resources Development Organisation with the storage capacity of Upper Krishna Project for the ultimate stage of 442 TMC. The storage capacity I am referring to in the case of Upper Krishna Project is for the ultimate stage which is not yet sanctioned and is neither under construction nor in operation. Only the foundations of the Almatti dam are however under construction.

Q. by Chairman. 33 Have the studies in respect of the storage capacity of the Upper Krishna Project been published anywhere?

A. 33 The details of the Upper Krishna Project are now before the Honourable Tribunal.

Q. by Member 1: 34 Please look at the Project Report and the Salient Features (MYPK Volume III). Do you find the proportion of live storage to utilisation there?

A. 34 Please see page 8 of the Upper Krishna Project Report (MYPK Volume III). The live storage of Narayanpur ~~Dam site~~ Reservoir is 23.77 TMC and of the Almatti ~~Dam site~~ Reservoir is 215.27 TMC and that of Hippargi Weir ~~site~~ 2.52 TMC. The total live storage capacity of these three is equal to about 240 TMC. The total utilisation under the project is 442 TMC, vide page 14, item 13. Therefore, the ratio is about 0.55.

Cross-examination continues:

Q. 35 Mr. Angadi, was the Bhima Irrigation Project you have just now mentioned designed ~~as~~ a carry-over storage?

A. 35 No.

Q. 36 Is the Upper Krishna Project in its final stage designed as a carry-over ~~project~~?

A. 36 No.

Q. by Member 2: 37 If the Upper Krishna Project utilisation is reduced and the storage capacity is kept the same, then it becomes a carry-over project. Is it not so?

A. 37 Yes, Sir. But the entire balance live storage capacity over and above that required for a reduced utilisation need not be the carry-over.

Q. by Member 2: 38 It will all depend to what extent utilisation is permitted. Is it so?

A. 38 Yes, Sir.

Cross-examination continues:

Q. 39 Please see page 4 of your deposition. Will you kindly state on what basis you have taken 2176 TMC as the 75 per cent dependable yield of River Krishna?

A. 39 I have taken the figure of 2176 TMC on the basis of the re-constructed flow data of the Central Water & Power Commission based on the model studies conducted at Khadakwasla on the Vijayawada Anicut.

Q. 40 Mr. Angadi, you have assumed monthly mean flows in the graph at page 5 of your deposition. Will you please state the source for the monthly figure there?

A. 40 They are given in MRK Volume II in pages 28, 29, 30 and 31.

Qx41a Q41 Will you kindly show me the distribution of 2176 T.M.C. in the various months?

A 41 I have got these computations made under my supervision.

Q 42 Can you produce them?

A 42 Well, I will produce them later.

Q 43 Can you give us the basis of your assumption of utilisation of 2176 T.M.C. shown in the red lines in your flow hydrograph at page 5 of your deposition?

A43 As I have already explained in my deposition, the distribution of monthly withdrawals is on my rough calculations of utilisations amongst all the three States based on a hypothetical assumption of allocations amongst the three States of the total reconstructed yield of 2176 T.M.C. at 75% dependability.

Q 44 Please see page 11 of your deposition?

A 44 Yes, I have seen it.

Q 45 According to you, a conservation storage of 1465 T.M.C. is to be provided to utilise the dependable yield of 2176 T.M.C. Is it not so?

A 45 Yes, according to my hypothetical studies for the purpose of explaining what a conservation storage is.

Q 46 Can you say what is the total live storage capacity of all the works in the Krishna basin for the present utilisations?

A 46 I cannot tell off-hand

A 47 Can you work it out and tell us?

A 47 I shall work it out and give you tomorrow.

Q 48 Mr. Angadi, have you not assumed in diagram II at page 12 of your deposition that it is possible to utilise an annual quantum of 2406 T.M.C. in 75% of the years by providing a storage of 283 T.M.C. over and above the storage required for utilising 2176 T.M.C. Is it not so?

A 48 No. The additional storage of 283 T.M.C. would be required over and above the live sotrage capacity for utilising 2406TMC at 72.5 % dependability and not 75% dependability

Q; 49 Mr. Angadi, could you tell us what is the live storage required for the utilisation of 2406 TMC?

A: 49 The exact estimate of the storage required for utilising 2406 TMC can be only known after I know the rate of withdrawals of all th three States each month.

Q: 50 Mr. Angadi, could you indicate from your study how and where you intend to provide additional storage of 283 TMC?

A: 50 I have already stated in my deposition that 180 TMC of carry over storage already exists in the Nagarjunasagar and Srisailam reservoirs. The balance of 103 TMC can be provided in Mysore State.

Q: 51 (By Chairman) With regard to the carryover of 180 TMC in Nagarjunasagar and Srisailam you have made a bare statement but you have not given any reasons. Is not that so?

A: 51 Yes. But detailed studies have been made by me to show that a carryover capacity of more than 180 TMC exists in Srisailam and Nagarjunasagar reservoirs.

Q 53 (By Chairman) You have not referred to any statement or study on that point. Whatever study you have is in your pocket and not before the court. Is not that so?

A- Yes.

Q 53 (By Mr. Pasha). Please see statement No.1 at page 21 of your deposition. Under the heading "results" in the foot-note it is stated that annual utilisation of 2300 TMC. is possible in the 38th year of the 51 years series after providing a carryover of 283 TMC. Is it not so?

A 53 Yes. It is possible to utilise 2406 TMC. for 37 years out of 51 years and 2300 TMC. for one more year, that is the 38th year.

Q 54 Does not 38/51 x 100 work out to 74.5% or in an annual utilisation of 2300 TMC. is possible in 74½ years out of 100 years. Is it not so ?

A; 54 I have said that not only 2300 TMC. can be utilised with a smaller carryover of 180 TMC. at 74.5% dependability but also 2406 TMC can be utilised at 72.5% dependability. with a Carryover of 285 TMC.

Q 55 (By Chairman) Mr. Angadi, I think you said that with the carryover storage of 283 TMC. you can have 72.5% dependable flow of 2406 TMC. You remember that.

A 55 Yes.

Q 56 (By Chairman Will you kindly tell me for a 75% dependable flow of 2406 TMC. how much carryover storage is necessary?

A. 56 Any amount of additional carry-over storage will not make it possible to make 2406 TMC available at ~~72.5~~ per cent dependability.

Q. by Chairman: 57 With a carry-over storage of 283 TMC how much dependable flow of 75 per cent can you have?

A. 57 It will be worked out and given.

Q.by Chairman: 58 Mr. Angadi, please see monthly flow hydrograph at page 5 of your deposition and ~~at~~ pages 7 and 8 before you. Is it correct to say that since Kharif crop is grown between June to November you can utilise, for the Kharif crop, only the mean annual flow of June for all the months from June to November and no more?

A. 58 Yes, Sir.

Q. by Chairman: Why can't you, for the Kharif crop or
59 some kinds of Kharif crop, use less in the first month of June and more in the next months of July, August and September?

A. 59 The variations of water requirements of crops, month-wise, are very small under irrigation. Therefore, for all our irrigation planning of our projects, we generally consider ~~were~~ uniform rates of withdrawal during all the four months of the Kharif crop.

60
Q. by Chairman: Can't you shift the Kharif crop from June to July?

A. 60 We can.

Q. by Chairman: In that case, your assumption that the
61 maximum utilisation of the Kharif crop would be the mean flow of June would fall to the ground.

A. 61 In the first place, this hydrograph is intended to explain to the non-technical persons, in a very broad way, ~~what a~~ the concept of a ~~xx~~ conservation storage and

a carry over-storage mean. Kharif crops generally, even under irrigation, are sown right from the month of June and that is how we plan our monthly withdrawals for our projects.

Cross-examination continues:

Q. 62 In your Statement No.1, column 3, do you notice a series of 3 consecutive deficit years, viz. 1904-05, 1905-06 and 1906-07 in which annual yields are less than 75 per cent dependable yield of 2176 TMC in the 14-year period for 1900-01 to 1913-14.

A. 62 Yes, but it is very significant to note that the system has substantially benefited in the year 1904-05 to the extent of the full carry-over of 283 TMC which it could not have done but for the carry-over storage. This is evident from column 3 for those three years.

Q 63 : Do you also notice that the deficiencies below 2176 T.M.C. in the 3 years 1904 to 1907 are 241 T.M.C. in the year 1904-05, 841 T.M.C. in the year 1905-06 and 170 T.M.C. in the year 1906-07 ?

A 63: Yes. They are the natural yields of the series.

Q 64: On the assumption of 283 T.M.C. carry-over capacity, the deficiencies in the above same years from 2406 T.M.C. are increased to 288 T.M.C. in the year 1904-05, 1071 TMC in the year 1905-06 and 400 T.M.C. in the year 1906-07. Is it not so?

A 64: Yes, it is so.

Q 65: Does it not follow that the deficiencies in the 3 years have increased as a result of your carry-over assumption ?

A 65: With reference to the higher utilisation figure of 2406, the deficiencies have increased but it is significant to note that the total utilisation in those 3 years and particularly in the first year mentioned by you have been increased to an extent of 283 T.M.C.

Q 66: Do you also notice that your carry-over assumption introduces additional series

of 3 bad years, namely, 1911-12, 1912-13 and 1913-14 in the same 14 years period of 1900-01 to 1913-14? Is it not so?

A 66 It does. But again the year 1911-12 gets the full advantage of improvement to the extent of 283 T.M.C. by carry-over storage.

Q 67 You have stated that there is some carry-over in Lakkavalli reservoir also. Is it not so?

Yes.

Q 68 Was the Lakkavalli reservoir designed as a carry-over reservoir ?

A 68 I have no idea.

Q 69 Was not the Lakkavalli reservoir designed as a multi-purpose project for power and irrigation?

A 69 It was designed, to my knowledge, primarily as an irrigation project, with fringe benefits from power, if available.

Q 70 Is the Lakkavalli reservoir now functioning as a multi-purpose project for power and Irrigation?

A 70 It is functioning essentially as an irrigation project.

Q 71 May I take it that the power component of the Lakkavalli reservoir has been given up ?

A 71 I cannot say

Q 72 What was the designed component of the capacity for power and what was the designed component of the capacity for irrigation in the Lakkavalli Project ?

A 72 I have not studied that aspect.

Q 73 If at the end of any water year there is some water remaining in the reservoir, can you call such reservoir a carryover reservoir?

A 73 If that balance water is left after meeting the full requirements planned under that reservoir (due to surpluses from the previous year) it will be carryover. I am referring to the live storage when I referred to the balance storage.

Q 74 I suggest to you that carryover studies can be made only reservoirwise and not for a river system as a whole ?

A 74 In my opinion carryover studies can be made for the river system as a whole also.

Q 75 Can it be done without any reference to any reservoir?

A 75 The total advantage that a system can derive and for that matter even a sub-basin can derive can be worked out as a preliminary even without details of reservoir withdrawals.

Q 76 (By Chairman) Can a carryover storage of the entire basin for the full utilisation of the 75%

dependable flow be planned without the co-operation of and mutual agreement between the States concerned?

A 76 It cannot be planned without the mutual agreement and co-operation of the States.

Q 77 (By Mr. Pasha) I suggest to you that in the absence of details of reservoirs and their live storage capacities with pattern of inflow and utilisation, it is not possible to draw any conclusions or make any study regarding carryover?

A 77 With all respects, no. It is possible.

Q: 78 If carryover storage is indeed storage which permits the utilisation of the surpluses of good years ~~and~~ in lean years, I suggest to you that the storage to be provided for carryover must be more than the average yield of the river?

A 78 The storage to be provided for carryover ~~must~~ be anything in excess of the storage required for the utilisation of a desired dependability planned at that site.

Q 79 I suggest to you that unless the reservoir is originally designed as a carryover

Reservoir one cannot use its capacity for carryover purposes without curtailing its designed utility?

A 79 Not necessarily. I agree that there shall be no curtailment of the designed utility of the project but there is absolutely no harm in making the carryover study to determine the carryover idle capacity available in the reservoir system of that project.

K. G. Unit.

MYW-1.

7.1.1972

Q. No. 80 to 82.

Page no 59 to 73.

Cross-examination of Mr. B.C.Angadi:

by Mr. Pasha (deferred on 6-1-72)

continues:

Witness on former oath.

Witness volunteers:

On page 47, in the last line, after the word "dependability" add the words "with a carry-over of 283 TMC".

Cross-examination continues:

Q.80
By Chairman: Mr. Angadi, have you got anything to add to your answer to Question 57?

A. 80 Yes Sir. The answer is - with a ~~xxx~~ carry-over of 283 TMC, the 75 % dependable flow is 2291 TMC. I have the computation sheet here.

(Witness hands over the computation sheet for incorporation in his evidence.)

THE 75% DEPENDABLE FLOW WITH A CARRYOVER OF 283 T.M.C. IN KRISHNA BASIN.

The 74.5 per cent dependable flowis 2300 TMC. (Sl.No.22 of Statement No.1 at page 20 of my deposition i.e. the year 1921-22)

The 76.5 per cent dependable flowis 2264 TMC (Sl.No.13 of Statement No.1 at page 20 of my deposition i.e. the year 1912-13).

Therefore, the 75 per cent dependable flow is = 2300 - ø 1/4 (2300-2264) = 2300-9=2291 TMC.

Q. 81 (by Mr. Pasha) Mr. Angadi, have you anything to add to your answer to Question 42?

A. 81 I now produce the computations made by me of the mean monthly flow for a 75% dependable year hydrograph.

(Witness hands over to the stenographer statment and charts regarding computation of mean monthly flows for a 75 per cent dependable year hydrograph, for incorporation in his evidence.)

COMPUTATION OF MEAN MONTHLY FLOWS FOR A 75% DEPENDABLE YEAR HYDROGRAPH.

In the yield series of Vijayawada the nearest year to the 75 percent dependable year of 2176 TMC is 1935-36 with a yield of 2164.82 TMC, vide MRK-II, pps 30-31. The gauged flow for this year is 1845.52 TMC and the utilisation 319.30. The monthly gauged figures for the year are also available (vide MRK II P.30-31).

The monthly withdrawal figures for the year 1935-36 are not available. But monthly withdrawal figures for years 1941-42 onwards are given in the K.G.C Report-Annexure IV. The earliest year that can be considered, therefore, is 1941-42 whose monthly withdrawals have been made use of. Where the withdrawal figures for some of the projects are not available in the year 1941-42, the average figures for those projects in a decade are taken according to availability. The sources are quoted under column 40.

For Minor works, the average annual figures for the decade 1941-42 to 1950-51 are taken from the Statement of agreed utilisations. The monthly split up for these has been made taking the requirement of first crop equally for the 5 months from June to October, and that for second crop equally from November to March. The total annual utilisation thus computed came to 321.28 TMC.

As the total annual utilisation has to be restricted to 2176 TMC, the monthly figures are therefore, converted proportionately and are given in Table-I both in TMC in Col.7, as well as mean monthly flow in cusecs in Col.8.

MONTHLY FLOW PATTERN OF THE VIRGIN FLOWS AT VIJAYAWADA DURING THE YEAR 1935-36 TABLE-I
(NEAREST YEAR FOR 75% DEPENDABLE YEAR)

Sl. No.	Months.	Gauged flow as at Page No.30-31 MRK-II in TMC	Withdrawals by Major, Medium and Minor Projects from TABLE-II in TMC	Monthly VIRGIN Flow (3+4) in TMC	Percentage of monthly flow to total year's flow	Monthly virgin flow for a 75% dependable year (of 2176 TMC yield)	Mean monthly flow in cusecs for the 75% dependable year.
1	2	3	4	5	6	7	8
1.	June	56.67	40.68	97.35	4.50	98	37800
2.	July	342.40	46.53	388.93	17.94	391	146000
3.	August	536.00	48.20	584.20	27.00	586	218800
4.	September	591.06	47.03	638.03	29.50	640	246900
5.	October	184.50	45.73	230.23	10.60	231	86250
6.	November	86.50	19.57	106.07	4.90	107	41300
7.	December	17.20	18.48	35.68	1.60	36	13450
8.	January	8.45	15.97	24.42	1.10	25	9330
9.	February	8.76	12.79	21.55	0.99	22	8780
10.	March	4.70	12.35	17.05	0.79	17	6350
11.	April	5.13	6.98	12.11	0.56	12	4630
12.	May	4.21	6.97	11.18	0.52	11	4100
	TOTAL	1845.52	321.28	2166.80	100.00	2176	

MONTHLY WITHDRAWALS -- TABLE II

Sl. No.	Name of the Project.	Annual with-drawal plus losses TMC	JUNE			JULY			AUGUST			SEPTEMBER		
			With-drawals in TMC	Evapo-ration losses in TMC	Total TMC	With-drawals in TMC	Evapo-ration losses in TMC	Total TMC	With-drawals in TMC	Evapo-ration losses in TMC	Total TMC	With-drawals in TMC	Evapo-ration Losses in TMC	To T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ANDHRA PRADESH													
1.	K.C.Canal	31.90+0	1.32	-	1.32	4.38	-	4.38	4.97	-	4.97	4.19	-	4.19
2.	Palair	1.71+0.68	0.10	0.05	0.15	0.35	0.05	0.40	0.29	0.05	0.34	0.20	0.05	0.25
3.	Pakhal Lake	1.78+0.85	0.05	0.08	0.13	0.11	0.07	0.18	0.18	0.07	0.25	0.15	0.07	0.22
4.	Muniyeru	3.29+0	0.06	-	0.06	0.30	-	0.30	0.63	-	0.63	0.57	-	0.57
5.	Wyra	2.52+0.88	0.01	0.08	0.09	0.17	0.08	0.25	0.65	0.08	0.73	0.50	0.08	0.58
6.	Minor Works	76.79	11.927	-	11.927	11.927	-	11.927	11.926	-	11.926	11.926	-	11.926
	MAHARASHTRA													
1.	Krishna Canal	1.44+0	0.11	-	0.11	0.11	-	0.11	0.13	-	0.13	0.19	-	0.19
2.	Nehar Tank	0.07+0.06	-	0.005	0.005	-	0.005	0.005	0.01	0.005	0.015	0.01	0.005	0.015
3.	Tata Hydel Power Scheme	7.13+0.70	0.618	0.06	0.678	0.856	0.06	0.916	0.786	0.06	0.846	0.612	0.06	0.672
4.	Andhra Valley Power Scheme	5.06+0.70	0.862	0.06	0.922	0.776	0.06	0.836	0.515	0.06	0.575	0.507	0.06	0.567
5.	Tata Power Scheme(Mulshi)	16.28+1.0	1.30	0.09	1.39	1.38	0.09	1.47	1.43	0.09	1.52	1.38	0.09	1.47
6.	Mutha Canals MRBC - MLBC	4.47+0.50	0.25	0.05	0.30	0.57	0.05	0.62	0.73	0.04	0.81	0.61	0.04	0.65
7.	Visapur Tank	1.30+0.04	0.08	0.004	0.084	0.09	0.004	0.094	0.10	0.004	0.104	0.02	0.004	0.024
8.	Nira Canal RBC&LBC	32.03+2.30	2.21	0.21	2.41	3.34	0.20	3.54	3.50	0.19	3.69	2.84	0.19	3.03
9.	Ashti	0.45+0.40	0.04	0.04	0.08	0.02	0.04	0.06	0.02	0.04	0.06	0.61	0.04	0.65
10.	Mhaswad	1.64+0.60	0.07	0.05	0.12	0.10	0.05	0.15	0.10	0.05	0.15	0.07	0.05	0.12
11.	Ekruk	0.45+1.2	0.04	0.01	0.14	0.02	0.10	0.12	0.03	0.10	0.13	0.02	0.10	0.12
12.	Minor Works	12.65	2.310	-	2.310	2.310	-	2.310	2.310	-	2.310	2.309	-	2.309

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
MYSORE														
1.	Gokak Canal	0.82+0	0.08	-	0.08	0.10	-	0.10	0.16	-	0.16	0.11	-	0.11
2.	Bhadra Anicut Channel	3.05+0	0.17	-	0.17	0.47	-	0.47	0.52	-	0.52	0.36	-	0.36
3.	Dharma Canal System	1.2	0.24	-	0.24	0.24	-	0.24	0.24	-	0.24	0.24	-	0.24
4.	Vani Vilas Sagar	3.77+2.30	0.23	0.20	0.43	0.32	0.20	0.52	0.37	0.19	0.56	0.32	0.19	0.51
5.	Minor Works	94.13	17.533	-	17.533	17.533	-	17.533	17.533	-	17.533	17.532	-	17.532
	TOTAL				40.68			46.53			46.20			47.03

Sl. No.	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY		
	Withdrawals in TMC	Evaporation Losses in TMC	Total TMC	Withdrawals in TMC	Evaporation losses in TMC	Total TMC	Withdrawals in TMC	Evaporation losses in TMC	Total TMC	Withdrawals in TMC	Evaporation losses in TMC	Total TMC	Withdrawals in TMC	Evaporation losses in TMC	Total TMC
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
ANDHRA PRADESH															
1.	4.28	–	4.28	4.32	–	4.32	4.39	0.06	4.39	2.61	–	2.61	0.94	–	0.94
2.	0.41	0.06	0.47	0.32	0.06	0.38	0.02	0.06	0.08	–	0.06	0.06	0.01	0.06	0.07
3.	0.22	0.07	0.29	0.14	0.07	0.21	–	0.07	0.07	0.16	0.07	0.23	0.21	0.07	0.28
4.	0.63	–	0.63	0.53	–	0.53	0.18	–	0.18	0.14	–	0.14	0.09	–	0.09
5.	0.59	0.07	0.66	0.54	0.07	0.61	0.02	0.07	0.09	0.01	0.07	0.08	0.01	0.07	0.08
6.	11.926	–	11.926	3.451	–	3.451	3.451	–	3.451	3.451	–	3.451	3.451	–	3.451
MAHARASHTRA															
1.	0.10	–	0.10	0.14	–	0.14	0.16	–	0.16	0.20	–	0.20	0.11	–	0.11
2.	–	0.005	0.005	0.02	0.005	0.025	0.02	0.005	0.025	0.01	0.005	0.015	–	0.005	0.005
3.	0.593	0.06	0.653	0.0525	0.05	0.575	0.491	0.05	0.545	0.516	0.06	0.576	0.485	0.06	0.546
4.	0.640	0.06	0.700	0.695	0.05	0.745	0.695	0.05	0.595	0.772	0.06	0.836	0.836	0.06	0.896
5.	1.36	0.08	1.44	1.35	0.08	1.43	1.40	0.08	1.48	1.39	0.08	1.47	1.25	0.08	1.33
6.	0.42	0.04	0.46	0.29	0.04	0.33	0.31	0.04	0.35	0.29	0.04	0.33	0.26	0.04	0.30
7.	0.04	0.003	0.043	0.24	0.003	0.243	0.29	0.003	0.293	0.14	0.03	0.143	0.08	0.003	0.083
8.	2.47	0.19	2.66	3.31	0.19	3.50	3.65	0.19	3.84	2.99	0.19	3.18	1.91	0.19	2.10
9.	0.03	0.03	0.06	0.06	0.03	0.09	0.06	0.03	0.09	0.05	0.03	0.08	0.04	0.03	0.07
10.	0.09	0.05	0.14	0.28	0.05	0.33	0.27	0.05	0.32	0.23	0.05	0.28	0.09	0.05	0.14
11.	0.02	0.10	0.12	0.05	0.10	0.15	0.07	0.10	0.17	0.06	0.10	0.16	0.03	0.10	0.13
12.	2.309	–	2.309	0.2202	–	0.2202	0.2202	–	0.2202	0.2202	–	0.2202	0.2202	–	0.2202
MYSORE															
1.	0.16	–	0.16	0.12	–	0.12	0.09	–	0.09	–	–	–	–	–	–
2.	0.37	–	0.37	0.34	–	0.34	0.34	–	0.34	0.12	–	0.12	0.14	–	0.14
3.	0.54	–	0.24	–	–	–	–	–	–	–	–	–	–	–	–
4.	0.29	0.19	0.48	0.35	0.19	0.54	0.22	0.19	0.41	0.31	0.19	0.50	0.35	0.19	0.52
5.	17.532	–	17.532	1.293	–	1.293	1.293	–	1.293	1.293	–	1.293	1.292	–	1.292
			45.73			19.57			18.48			15.07			12.79

Sl No.	MARCH			APRIL			MAY			SOURCE: (Withdrawals as for the year 1941 or Average of the nearest decade is taken according to availability)
	Withdrawals in TMC	Evaporation Losses in TMC	Total TMC	Withdrawals in TMC	Evaporation Losses in TMC	Total TMC	Withdrawals in TMC	Evaporation Losses in TMC	Total TMC	
	31	32	33	34	35	36	37	38	39	40
ANDHRA PRADESH										
1	0.30	-	0.39	0.10	-	0.10	0.09	-	0.09	KGC Annexure IV, page 38-39
2	0.01	0.06	0.07	-	0.06	0.06	-	0.06	0.06	Withdrawals KGC Annexure IV, P.46-47 (Evaporation Losses, KGC A-VIII.P.28)
3	0.25	0.07	0.32	0.08	0.07	0.15	0.01	0.07	0.08	-do- -do- VIII.P.35 -do- P.33
4	0.09	-	0.09	0.07	-	0.07	-	-	-	KGC Annexure VIII.P.39
5.	0.01	0.07	0.08	0.01	0.07	0.08	-	0.07	0.07	Withdrawals KGC Annexure VIII.P.44 (Evap. Losses KGC A VIII-P.42
6	3.450	-	3.450	-	-	-	-	-	-	*
MAHARASHTRA										
1	0.10	-	0.10	0.05	-	0.05	0.04	-	0.04	KGC Annexure VIII.P.49
2	-	0.005	0.005	-	0.005	0.005	-	0.005	0.005	Withdrawals KGC Annexure VIII.P.54 Evaporation Losses KGC A-VIII P.52
3	0.536	0.06	0.596	0.546	0.06	0.606	0.566	0.06	0.626	-do- Annexure VIII.P.58 -do- P.5
4	0.998	0.06	1.058	0.895	0.06	0.955	0.879	0.06	0.939	-do- -do- P.61 -do P.60
5	1.25	0.08	1.33	1.33	0.08	1.41	1.42	0.08	1.50	-do- -do- IV.P.16-17 -do-P.62
6	0.25	0.04	0.29	0.24	0.04	0.28	0.25	0.04	0.29	-do- -do-VIII.P.66-67 -do-P.64
7	0.08	0.003	0.083	0.06	0.003	0.063	0.08	0.003	0.083	-do- -do- P.74 -do- 72
8	1.84	0.15	2.03	1.88	0.19	2.07	2.09	0.19	2.28	-do- -do- P.80-81 -do- P.77
9	0.06	0.03	0.09	0.06	0.03	0.09	0.02	0.03	0.05	-do- -do- P.92 -do- P.90
10.	0.07	0.05	0.12	0.14	0.05	0.19	0.13	0.05	0.18	-do- -do- P.97 -do- P.91
11	0.02	0.10	0.12	0.05	0.10	0.15	0.04	0.10	0.14	-do- -do- P.104 -do- P.101
12	0.2202	-	0.2202	-	-	-	-	-	-	*

	31	32	33	34	35	36	37	38	39	40
MYSORE										
1	.0	-	-	-	-	-	-	-	-	KGC Annexure IV, P.No.10-11
2	0.03	-	0.08	0.10	-	0.10	0.04	-	0.04	Withdrawals KGC Annexure VIII.P.116
3	-	-	-	-	-	-	-	-	-	-do- -do- P.125(Total utilisation divided by Crop period)
4	0.35	0.19	0.54	0.36	0.19	0.55	0.31	0.19	0.50	-do- -do- P.129 --Evaporation Losses KGC Annx.VIII P.127
			12.35			6.98			6.07	

* For Minor works average for the Decade 1941-42 to 1950-51 from agreed utilisation of Minor scheme is taken.

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Q. 82 Mr. Angadi, have you anything to add to your answer to Question 47?

A. 82 Yes. The live storage capacity of all the works in the Krishna basin for the present utilisation of 1319.9 TMC is about 721.16 TMC.

(Witness hands over to the stenographer statement in three sheets showing the live storage capacity in Krishna basin for the present utilisation, for incorporation in his evidence.)

STATEMENT SHOWING THE LIVE STORAGE CAPACITY IN KRISHNA BASIN FOR THE PRESENT UTILISATION.

Sl. No.	Name of the Project.	Live storage in TMC	Utilisation in TMC	Reference
1	2	3	4	5
1.	Krishna Canal Ex-Khodshi Weir.	-	2.70	-
2.	Koyna Hydro-electric Stages I & II	69.00	74.80	KGCR A.X.P.27
3.	Warna	33.74	47.70	MRPK IV.P.II
4.	Tulshi	3.40	2.60	KGCR A.XI.P. 56
5.	Radhanagari	6.00	11.00	KGCR A. IX.P.39
6.	Upper Krishna Stage I	44.79	103.00	MYPK-1 P.20
7.	Ghataprabha Stages I & II	20.20	36.60	KGCR.A.IX.P.63
8.	Malaprabha	18.94	37.20	KGCR.A.XI.P.66
9.	Tata Hydel Schemes	41.00	45.00	KGCR.A.VIII. P.57, 60 & 62
10.	Mutha System Ex-Khadakwasla	17.80	23.50	KGCR A.VIII.P.64 & KGCR A.X.P.30
11.	Ghod Dam	6.03	10.40	KGCR.A.IX.P.45
12.	Kukdi	16.12	20.10	MRPK 17.P.IV
13.	Visapur	1.23	0.50	KGCR.A.VIII.P.72
14.	Bhima	57.12	90.20	MRPK,21 P.VI
15.	Nira Canal System	24.20	34.60	KGCR.A.VIII.P.77
16.	Vir Dam	9.40	14.70	KGCR.A.X.P.35
17.	Mhaswad	1.46	2.20	KGCR.A.VIII.P.95
18.	Ashti Tank	1.40	0.70	KGCR.A.VIII.P.90
19.	Mangi tank	1.20	1.10	KGCR.A.IX.P.55
20.	Ekruk tank	2.60	1.80	KGCR.A.VIII.P.102
21.	Khasapur tank	0.60	1.30	KGCR.A.IX.P.59
22.	Sholapur City Water Supply Scheme	-	0.30	-
23.	Kurnoor	1.69	1.50	KGCR.A.XI.P.52
24.	Chandrampalli	1.11	1.90	

1	2	3	4	5
25.	Kotepallivagu	0.96	2.00	KGCR.A.XI.P.16
26.	Koilsagar	1.59	3.90	KGCR.A.IX.P.12
27.	Okachettivagu	0.98	1.90	KGCR.A.XI.P.103
28.	Dindi	2.42	3.70	KGCR.A.VIII.P.23
29.	Guntur Channel	-	4.00	
30.	Vaikuntapuram Pumping Scheme	-	2.60	
31.	Bhadra Anicut	-	3.10	
32.	Tunga Anicut	-	11.50	
33.	Ambligola	0.41	1.40	KGCR.A.X.P.67
34.	Anjanapur	0.58	2.50	KGCR.A.VIII.P.119
35.	Dharma Canal System and Dharma Project.	0.78	2.20	KGCR.A.X.P.71
36.	Tungabhadra L.B.C.	117.40	101.30	KGCR.A.IX.P.16
37.	-do- R.B.L.L.C. (Mys)		22.50	
38.	-do- R.B.L.L.C. (A.P.)		29.50	
39.	-do- R.B.H.L.C. (A.P.		32.50	
40.	-do- R.B.H.L.C. (Mys)		17.50	
41.	Hagari Bommanahalli	1.75	2.00	KGCR.A.X.P.75
42.	Gajuladinne	1.50	2.00	KGCR.A.XI.P.31
43.	Bhairavanithippa	2.31	4.90	KGCR.A.IX.P.31
44.	Vanivilasagar	25.32	8.20	KGCR.A.VIII.P.127
45.	Musi	4.80	9.40	KGCR.A.IX.P.35
46.	Water Supply to twin Cities of Hyderabad and Secunderabad	-	3.90	
47.	Palair	2.34	4.00	KGCR.A.VIII.P.28
48.	Pakhal Lake	3.26	2.60	KGCR.A.VIII.P.33
49.	Muniyeru	-	3.30	
50.	Lankasagar	0.30	1.00	KGCR.A.XI.P.24

1	2	3	4	5
51.	Myra	2.10	3.70	KGCR.A.VIII.P.42
52.	Krishna Project	29.96	36.30	MRPK.3 P.(ii)
53.	Gokak Canal	0.87	1.40	KGCR.A.VIII.P.102
54.	Nagarjunasagar	88.00	163.50	KGCR.A.X.P.9
55.	Krishna Delta		161.00	Capacity not known
56.	Bhadra Reservoir	54.50	61.70	KGCR.A.IX.P.74
57.	Vijayanagar Channels	-	13.70	
58.	Rajolibunda Diversion Scheme (Mysore)	-	0.80	
59.	-do- (A.P.	-	10.00	
60.	K.C.Canal	-	19.00	
	Total	721.16	1319.90	

NOTE: 1. The projects considered as per Annexure 'A' and 'B' to Krishna Water Disputes Tribunal Order dated 7.5.1971 and the utilisation in respect of projects in Annexure 'B' are as per figures of Mysore State in col.No.11.

2. The source for live storage capacity is given in the reference column.

3. The Minor Irrigation Works have not been considered since their live capacities are not known.

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

In the matter of a Water Dispute and connected matters regarding the Inter-State River Krishna and the River Valley thereof.

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C.M.P. No.16( )/72 KWDT.

THE STATE OF MYSORE PETITIONER

To

The Honourable Chairman of the Tribunal and the other Honourable Members thereof.

THE HUMBLE PETITION OF THE PETITIONER ABOVE NAMED

MOST RESPECTFULLY SHOWETH:

The State of Andhra Pradesh have filed with C.M.P. No.16(1)/72 KWDT an additional statement of case in support of their contentions in their statement of case. The State of Mysore craves to file the annexed Rejoinder to the Additional Statement of Case filed by the State of Andhra Pradesh.

NEW DELHI-49,

DATED:

ADVOCATE FOR THE GOVERNMENT OF MYSORE

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REJOINDER OF MYSORE TO THE ADDITIONAL STATEMENT OF CASE OF ANDHRA PRADESH

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The State of Andhra Pradesh has prayed that the control and management of the following works be vested in a joint Control Board consisting of the representatives of the concerned States and the Government of India.

a) The head works of the R.D.S. and the portion of the canal under the said scheme within the State of Mysore.

b) The Left side of the Tungabhadra Dam and the sluices of the left side of Tungabhadra.

c) The Left Bank Low Level Canal within the State of Mysore.

d) The Tungabhadra Dam Power House on Munirabad side.

e) Regulation, inspection and control of withdrawals into the Vijayanagar or Premoghal Channels.

2. It is submitted that the State of Andhra Pradesh in its supplemental pleadings vide CMP 16(25) 71-KWDT) has already prayed that the items "a to d" in the para supra above be vested in the Tungabhadra Board. This has already been replied at length in the rejoinder of Mysore State to the supplemental pleadings of Andhra - Pradesh vide CMP 16(38)71-KWDT, which may be

read together with this. The State of Mysore contends that as long as the Tungabhadra Project and Rajolibunda Diversion Scheme head works lie within the geographical limits of Mysore the proposal for their control and management being vested with any other authority cannot be accepted. It is submitted that the prayer of Andhra Pradesh is essentially based on exaggerated and baseless claims for waters from the Tungabhadra Reservoir. Once the equitable share of Andhra Pradesh in the waters of Krishna and its tributaries is determined and decided by this Hon'ble Tribunal, it is submitted that the State of Mysore is bound to regulate the waters to Andhra Pradesh and there is no reason to apprehend that it will not be so done. The process of regulation will be inherent in the decision of this Hon'ble Tribunal, by arranging for gauging and regulation of waters at the inter-State borders.

3. It is also submitted that the prayer made for the establishment of a Joint Control Board for management and control of the various works listed in para above does not form part of the letter which has been referred to the Tribunal by the Govt. of India in letter No.4/2/70-WD, dated 20-2-1971 , for adjudication and in particular the prayer relating to the regulation, inspection and control of the withdrawals under the Vijayanagar Channels has no where been mentioned in that reference. It is submitted that the present prayer of Andhra - pradesh is therefore beyond the scope of the reference made to this Hon'ble Tribunal for adjudication and may therefore be rejected "in limine"

4. The allegations made by Andhra Pradesh in these further pleadings that the Mysore is "unauthorisedly" utilising under excess quantities of water for irrigation under the Vijayanagar Channels and Rajolibunda Diversion Scheme canal etc., for are denied and are not true and specially made for purpose of prejudicing this Hon'ble Tribunal. Without prejudice to

the contention of the State of Mysore that the prayer of Andhra Pradesh is beyond the scope of the reference made to the Tribunal, it is proposed to deal in the following paragraphs with these various allegations.

RAJOLIBUNDA DIVERSION SCHEME

5. With regards to the allegations made in paragraph I relating to the Rajolibunda Diversion Scheme, it is submitted as follows:

The States of Mysore and Andhra Pradesh have already filed with this Hon'ble Tribunal an agreement relating to the sharing of the waters under the Rajolibunda Canal. It has been agreed therein that the State of Mysore and the State of Andhra Pradesh will utilise 1.2 TMCFT. and 15.9 TMCFT. of waters respectively under the Rajolibunda Diversion Scheme. It is now alleged by the State of Andhra Pradesh that the State of Mysore has installed pumps on the banks of this canal and is unauthorisedly using excess waters. It is also alleged that the State of Mysore has not furnished the daily gauge data relating to the canal head works and therefore, there should be a joint control board.

6. The complaint is about the lift irrigation schemes from the canal. There are only two such minor schemes and the quantum utilised is very small and in any event the State of Mysore will not utilise under thisproject more than its share of water as already agreed upon. The details of these two Lift irrigation schemes are given at Annexure A at page..

7. For working out the utilisation of water by the State of Mysore under this Canal, the State of Andhra Pradesh has deducted the discharges as measured at the standing wave flume at the border from the discharges at the Head of the Canal and the balance is taken as having been utilised by the State

of Mysore. It may be pointed out that the canal in the head reach has not been calibrated and on a general check it is observed that the discharges calculated are erroneous. Similarly, it is also the apprehension of Mysore that the Standing wave flume at the border is not estimating the flows correctly. To determine the discharges in the canal correctly it is necessary that the canal in the head reach and at the border is calibrated and the discharges reworked out. Such calibration can be effected jointly by Andhra Pradesh and Mysore. Further, the canal losses in the reach upto the border cannot be attributed to Mysore utilisation alone but will have to be properly shared between the States of Mysore and Andhra Pradesh.

8. It is further submitted that the State of Andhra Pradesh has not suffered in their irrigation under the Rajolibunda Diversion Scheme in any manner. The following table indicates the actual area irrigated year-wise from 1961-62 to 1968-69 under the Rajolibunda Diversion Scheme . It also indicates the quantum of waters that were drawn by them at the border, in this canal, and the actual requirement of water for the areas irrigated as furnished by the State of Andhra Pradesh itself.

Year (1)	Area irrigated (2)	Water Drawn at the border (3)	Water actually required (4)	remarks
	acres			
1961-62	15,819	4.28	2.90	** Column 2:
1962-63	22,594	6.88	4.13	Figures as given at page 20 of APDK VII
1963-64	25,033	9.61	4.53	
1964-65	30,108	12.45	5.50	** Column 3
1965-66	30,726	11.96	5.61	Total of Figures as given at pages 13-14 of APDK VI
1966-67	49,506	15.07	9.05	
1967-68	51,992	14.94	9.50	** Column 4
1968-69	52,260	15.98	9.56	Figures as given at item 14 Statement No.3 of Exhibit MRK 265

It is clear from the above that the quantum of waters actually drawn at the border by Andhra Pradesh under the Rajolibunda Diversion Scheme Canal are much in excess of the actual requirement of the areas irrigated.

9. After the canal is properly calibrated, the gauge data at the head reach and border can be exchanged between the Representatives of the two States working on this canal and the share of waters allowable to Andhra Pradesh can be ensure

10. VIJAYANAGAR CHANNELS :

With regard to the allegations made in paragraph III relating to the addtiional utilisations under Premoghal channels in Mysore State it is submitted as follows:

Vijayanagar Channels are old river channels taking off from the Tungabhadra River and do not have regular control structures at their head for regulation of water into them. As such the quantity of water drawn by these various Channels except in the case of Raya and Basavana Channels which take off directly from the Tungabhadra Reservoir, are not measured or recorded.

11. The Vijayanagar Channels generally run very close to the river. These ancient channels were drawing supplies directly from the river and when the Tungabhadra Dam was constructed and Raya and Basavanna channels became submerged provision was made in the T.B.Dam itself for withdrawal of water for the Raya Basavanna Channel from a sluice. The Tungabhadra Project provides for drawing a discharge of 400 cusecs relating to Raya and Basavanna channels from the Tungabhadra Reservoir. ~~itself~~ (APPK 18 Page 76 lines 16-29) The drawal of water into the Vijayanagar channels has therefore to be understood with reference to the conditions existing prior to the construction of the Tungabhadra project and cannot be compared with the discharges now worked out by adopting certain reasonable duties assumed by Mysore for ascertaining the requirements under these channels. The water drawn into these channels for irrigation is not the measure of the actual utilisation under these channels. The allegation that these utilisations are unauthorised or that there have been excess utilisations affecting the lower down irrigation interests in Andhra Pradesh is denied. On the Tungabhadra River below the Vijayanagar channels, the only major irrigation canals taking off are the Rajolibunda Canal and the K.C.Canal; and the irrigation under the K.C.Canal has been on the increase year after year as indicated in the Rejoinder of Mysore to the supplemental pleadings of Andhra Pradesh. (Vide C.M.P. 16(38)/71-KWDT P.17-18) And this is a clear proof that the allegation of Andhra Pradesh is incorrect.

BELLA AND TURTHA CHANNELS:

12. With regards to the allegations made in paragraphs III.2 and III.3 relating to the excess withdrawal under Bella Channel and Turtha Channel, it is submitted as foblows:

The Bella and Turtha Channels are only 1½ miles and 10 miles respectively below the Tungabhadra Dam (MYPK 6 P.72)

The main source of supply of water for these channels has to be the Tungabhadra Dam. It has been alleged that 200 cusecs of water are being released from the Tungabhadra Dam for the Bella channel. This is not entirely correct as the water so released is not only used by the Bella channel but the K.C.Canal. Further it may be mentioned that the Vijayanagar Channels are open mouthed channels and therefore it cannot be assumed and should not be assumed that the entire flows let down into the river are diverted into the Bella Channel.

13. It has been further alleged by Andhra Pradesh in Paragraph II that Mysore State is drawing water from Gundala - kerivanka for the Turtha Channel and that this is unauthorised. It is also further alleged that the Gundlakeri Vanka carries the discharge intended for the Krishna Delta. It is ~~declined~~ denied by Mysore that Gundalakeri Vanka carries the discharge intended for the Krishna Delta. The State of Mysore in its rejoinder to the supplemental ~~statement~~ pleadings of Andhra Pradesh (vide (CMP No.16(38) 71-KWDT) has already contended that there is no such right or duty for contribution of water from the Tungabhadra Dam for Krishna delta.

14. Mysore State is within its rights in utilising the waters flowing in the natural stream in their territory so long as it is within their equitable share. The State of Mysore has ~~enjoy~~ con-fined its claim under Vijayanagar Channels to an utilisation of 13.70 TMCFT and so long as it is within its share, the complaint of Andhra Pradesh that the utilisations are unauthorised and they are affected thereby is wholly untenable.

RAYA & BASAVANNA CHANNELS

15. Regarding the further allegations in - Paragraph III.1 relating to excess withdrawals under Raya and Basavanna Channels, the State of Mysore submits as follows:

The Raya and Basavanna Channels were originally taking off from the Vallabhapur and Hosakote anicuts, which were submerged by the construction of Tungabhadra-Dam. It is seen from APPK 18 Page 76 lines 16-24 that a sluice of one vent has been provided in the Tungabhadra Dam for supplying water to the existing irrigation. "This is designed to discharge about 375 to 400 cusecs which is the normal discharge now drawn by both the Basavanna and Raya Channels to command 7,500 acres. These channels work at very low duties by long - established usage and custom".

16. Since all the Vijayanagar Channels are old and open mouthed channels without any suitable regulatory arrangements, the exact quantity of water drawn by them cannot be estimated. It was therefore indicated by the State of Mysore that the total - requirements under these channels would be 13.70 T.M.Cft. This was arrived at by assuming a crop pattern of 50% sugar cane and 50% paddy and providing for a duty of 45 acres/cusecs. These ~~xxx~~ -- ancient channels have been drawing water as per agelong usage and most of the water drawn is returned to the river by seepage and wastage.

(Contd....9)

17. It is further submitted that the current meter gaugings conducted referred to in the letter dated 17-11-1971, from the Superintending Engineer, Tungabhadra Board vide page 23 of the Supplemental pleadings of Andhra Pradesh were not in consultation with the State of Mysore and their accuracy is not acceptable and needs to be verified. The complaint of Andhra Pradesh without such verification is pre-mature.

18. It has been alleged by the State of Andhra Pradesh that the State of Mysore is drawing additional discharges for the Raya and Basavanna channels from the outlets at Mile 7/6 and Mile 9/6 of the 'Power Canal'. The State of Mysore denies the allegation. It is submitted that these outlets in the 'Power Canal' have been provided by the Government of Madras. ~~as can be seen from the letter of the Chief Engineer(Madras) dated~~ ~~vide Annexure A at page....~~. These outlets are operated by the Tungabhadra Board and not by Mysore State. The allegation therefore that Mysore is unauthorisedly drawing additional waters is denied.

19. The State of Mysore further submits that such allegations regarding unauthorised drawal of waters are baseless and do not form part of any of the issues before this Tribunal and therefore are irrelavant. Any complaint by any State relating to the utilisations by another state can only be made if such utilisations are in excess of that State's equitable share. It is for this Hon'ble Tribunal by its award to make such allocations and to indicate the manner and the method as to how such utilisations can be ensured and regulated. Such regulations and controls for ensuring proper utilisation will necessarily be not only at Tungabhadra but at all points of diversions in Maharashtra, Mysore and Andhra Pradesh.

Therefore the present allegations and reliefs made by Andhra Pradesh are denied.

TUNGABHADRA LEFT BANK HIGH LEVEL CANAL

20, With regard to the allegations in paragraph IV relating to unaccounted utxilisation by State of Mysore under the Tungabhadra Project Left Bank High Level Canal, the State of Mysore submits as follows:

The Left Bank High Level Canal is a part of the Tungabhadra Left Bank Canal project sanctioned by the Government of Hyderabad(vide MYDK-8, page 34). No separate quantum of water has been claimed by the State of Mysore for this canal and the claim will form part of and is included in the utilisations claimed under the Left Bank Main Canal. The apprehenssion of Andhra Pradesh regarding the drawing of additional supplies under the left Bank High Level canal is baselss.

LIFT IRRIGATION FROM THE FORESHORE OF THE TUNGABHADRA RESERVOIR:

21. It is alleged by the State of Andhra Pradesh in Para II at part of its supplemental pleadings that the State of Mysore has some Lift Irrigation Schemes on the foreshore of the Tungabhadra Reservoir and that such schemes are affecting the irrigation at and below Tungabhadra Dam and also reduce the life of the Reservoir by silting. It has been suggested by the State of Andhra Pradesh that the foreshore Lift Irrigation should be stopped forthwith.

22. Even though this allegation and request has been made, no specific prayer has been made regarding this item by the State of Andhra Pradesh in the present Statement.

23. There are a few Lift Irrigation Schemes taken up in Mysore State. But the utilisations under such schemes is negligible, and these schemes come under Minor Irrigation Works

The allegation made regarding the Reservoir getting silted up due to such Lift Irrigation Schemes is wholly incorrect and is denied. The waters of any river are used primarily for irrigation and if the contention of the State of Andhra Pradesh were to be accepted, no irrigation above a Reservoir could ever be permitted. Just as the State of Andhra Pradesh has set up a number of Lift Irrigation Schemes on the Tungabhadra River below Rajolibunda Diversion Scheme Anicut in Andhra Pradesh, the State of Mysore too has taken up Lift Irrigation Schemes on the Banks of Tungabhadra river. The State of Andhra Pradesh cannot ask for stoppage of all such schemes and it has no right to make such a request unless it can prove that its existing irrigation has been affected and that such utilisation of waters is beyond the equitable share of waters in Tungabhadra which is to be determined by this Hon'ble Tribunal. The allegation is therefore denied.

TUNGABHADRA PROJECT LEFT BANK CANAL - EXTENSION TO ALAMPUR AND GADWAL TALUKS

24. With regards to the allegations in paragraph V relating to the extension of Tungabhadra Project Left Bank Canal to Alampur and Gadwal taluks in Andhra Pradesh, the State of Mysore submits the following.

The State of Andhra Pradesh has prayed that the Hon'ble Tribunal may declare that the Tungabhadra Project taken on hand prior to November 1956, included the supply of 19.2 TMCFT. of water for irrigating areas in Gadwal and Alampur under the Left Bank Canal and include the same in the share of the State of Andhra Pradesh and give such other or further appropriate direction in this regard.

25. It is submitted that thisclaim of Andhra Pradesh for supply of water from the Left Bank Canal of Tungabhadra to areas in Andhra Pradesh has already been denied in the ~~Rajolibunda~~ Rejoinder of Mysore State to the Statement of Case and the supplemental pleadings of Andhra Pradesh vide MYK III and CMP 16(38)/71-KWDT No new grounds have been made out by Andhra Pradesh in their present pleadings and the various grounds already traversed in the rejoinder may be read as part of this Statement.

River Sluices

~~26. With regards to the allegations made in paragraph VI relating to the non-provision of river sluices in projects in Upper States, the State of Mysore submits as follows:~~

26. The State of Andhra Pradesh has sought to draw an inference from circumstances set out in pages 11 & 12 of their additional pleadings to justify their claim. These inferences are wholly wrong and they are denied. The State of Andhra Pradesh has sought to make out that the vent way of the bridge on the canal in ~~Mile 124~~ Mile 124, constructed by the erst-while State of Hyderabad, indicates that it was designed to serve theareas of Gadwal and Alampur now in Andhra Pradesh. It is submitted that the design of the went way of the bridge in mile 124 of the canl has no relation whatsoever with the claim made by Andhra Pradesh. The Canal upto mile 127 was designed as a navigable canal. There was no sanctioned scheme before the Government of erstwhile Hyderabad for irrigating lands in Alampur and Gadwal taluks beyond mile of 141 of the Left Bank Canal vide letter of the Secretary to Government of Hyderabad, Public Works Department addressed to Chief Engineer dated 28-7-1955 at page 10 of MYDK 20. It is submitted that the Government of Hyderabad had not sanctioned any detailed

estimates for the construction of the canal beyond mile 127. This branch canal has therefore been designed and constructed by the State of Mysore after detailed investigations to feed the area in this reach. The allegation that the alignment of the canal beyond mile 127 was changed by the State of Mysore is therefore baseless in as much as the detailed plans and estimates for the canal in this reach had not been sanctioned by the Government of Hyderabad. It is submitted therefore that the question of furnishing the details of the canal as made out by Andhra Pradesh does not arise and their claim for 19.2 TMCFT. of water from the Left Bank Canal is baseless and is ~~deined~~ denied.

27. With regards to the allegation at Page 12 relating to the map of the Tungabhadra Project ~~Left~~ kept in the model room on the Right flank of Tungabhadra Dam, the State of Mysore submits as follows: There has been no sanctioned scheme by the erstwhile Government of Hyderabad for constructing the canal beyond mile 141. It is already submitted that the sanctioned scheme as at MYDK 8 does not support the contention of Andhra Pradesh. The map kept in the model room cannot be used in assistance of their argument as it is not part of any evidence and the sanctioned report is against such contentions of Andhra Pradesh. The allegation is baseless and has to be rejected.

28. Another aspect made out by the State of Andhra Pradesh is that there are four penstocks installed in the Tungabhadra Dam on the left side and that one penstock had been blocked and that as against the original provision of 4 generating units only 3 units have been installed. No specific relief or prayer has been made in this regard by Andhra Pradesh. It is however, submitted that the claim of Andhra Pradesh for a share of power from

the Left Bank Power House has already been dealt with in detail in Rejoinders of Mysore State to supplemental pleadings of Andhra Pradesh vide CMPS No.16(38)/71-KWDT and 16(48)/71-KWDTand, It has already been denied that Andhra-Pradesh is entitled to any share of power from the Left Bank Power House.

~~VII~~. NON-PROVISION OF RIVER SLUCIES IN PROJECTS IN UPPER STATES.

29. It has been prayed by the State of Andhra Pradesh that the Hon'ble Tribunal may direct the States of Maharashtra and Mysore to provide adequate river sluices in all dams and anicuts in those States to ensure timely supplies to the State of Andhra Pradesh. In the matter of allocations of waters of inter-State rivers between the States, this tribunal has to make an allocation having regard to all circumstances relevant to such allocation and it is for this Hon'ble Tribunal to give such directions as are necessary by way of regulation or otherwise to ensure the proper working of the allocation so made. It is denied that such regulation to ensure proper working of the allocated waters could only be by constructing river sluices in the projects of the Upper State. Subject to such regulation or restriction as may be given by this Hon'ble Tribunal it is for each state to adjust its utilisations out ofits equitable share of waters. The daily requirements of irrigation in Andhra Pradesh will ~~also~~ have to be regulated by its from the reservoirs available in its own State.

30. Further it is submitted that water from a reservoir can be released into the river through a canal through the Power turbines as wellas through the spillway. The supply of any plans or maps for this purpose to Andhra Pradesh does not arise and is therefore not relavant.

mnv/3

16(I)/72 - KWDT

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6.1.72

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

(IN THE MATTER OF A WATER DISPUTE AND
CONNECTED MATTER REGARDING
THE INTER-STATE RIVER KRISHNA AND
THE RIVER VALLEY THEREOF)

ADDITIONAL STATEMENT OF CASE

FILED BY AND ON BEHALF OF THE

STATE OF ANDHRA PRADESH

JANUARY, 1972

NEW DELHI

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

(IN THE MATTER OF A WATER DISPUTE
AND CONNECTED MATTERS REGARDING
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JANUARY 1972

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

In the matter of a Water Dispute and connected matters regarding the Inter-State River Krishna and the River Valley thereof.

...

C.M.P.NO.16((1)72/~~71~~ KWDT.

6-1-72

THE STATE OF ANDHRA PRADESH .. PETITIONER

To
The Honourable Mr.Justice R.S.Bachawat,
Chairman of the Tribunal and the
other Honourable Members thereof.

THE HUMBLE PETITION OF THE PETITIONER ABOVE NAMED

MOST RESPECTFULLY SHEWETH:

During the Tour of the Honourable Tribunal in the States of Maharashtra, Andhra Pradesh and Mysore in October, 1971, certain facts, which support the contentions of the State of Andhra Pradesh in their Statement of Case and their Supplemental Representations, have come to light.

The State of Andhra Pradesh craves leave of this Honourable Tribunal to file the annexed additional Statement of Case setting out the relevant facts and prays that the same may be taken on file.

NEW DELHI

DATED 6-1-1972

(M. SITARAMA SASTRI)
SPECIAL OFFICER::WATER RESOURCES
GOVERNMENT OF ANDHRA PRADESH:PWD.

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

I N D E X

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5. ANNEXURE 'D'	Letter No.N.G.12/HD/3699-N dated 17-11-1971 from the Superintending Engineer, Public Works Department (Irrigation Branch), Tungabhadra Board to the Special Officer, Water Resources, Irrum Manzil, Hyderabad regarding the drawals through Raya and Basavanna channels with a copy of Memorandum No.10929/B1/65-7, dated 12.7.71 from the Secretary, Tungabhadra Board to the Chief Engineer, (Irrigation Branch), Tungabhadra Board, as enclosure.	23 - 25

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

In the matter of a water Dispute and connected matters regarding the Inter-State River Krishna and the River Valley thereof.

...

THE STATE OF ANDHRA PRADESH ... PETITIONER

ADDITIONAL STATEMENT OF CASE FILED BY THE STATE OF ANDHRA PRADESH

...

During the Tour of the Honourable Tribunal in the States of Maharashtra, Andhra Pradesh and Mysore in October, 1971, certain facts which support the contentions of the State of Andhra Pradesh in their Statement of Case and their Supplemental Representations, have come to light.

The same are set out below:

I. RAJOLIBUNDA DIVERSION SCHEME:

In letter No.825/P2/68-5 dated 25-9-1968 from the Secretary to the Government of Andhra Pradesh to the Secretary to Government of India, Ministry of Irrigation and Power (Ex.APK-414, Supplementary Pleadings Volume III pages 132 to 137) the State of Andhra Pradesh made a complaint regarding the short-fall of supplies at the Mysore - Andhra Pradesh border in the common canal of Rajolibunda Diversion Scheme and requested that the management of the Rajolibunda Diversion Scheme Headworks, as also the common portion of the Canal, should be taken over by the Government of India.

During the inspection of the Rajolibunda Diversion Scheme Headworks and the common portion of the Rajolibunda Diversion Scheme Canal on 21.10.71 instances of unauthorised utilisations under Rajolibunda Diversion Scheme under pumping installations at M.5/0 and M.13/4 of the Rajolibunda Diversion Scheme canal were noticed. At the time of inspection, the State of Mysore was requested to furnish full details of all such lift irrigation schemes.

The data filed by Mysore in MDK.VI gives only the daily gauge data of discharge over the anicut of Rajolibunda Diversion Scheme but not the gauge readings and withdrawals into the Rajolibunda Diversion Scheme main canal at head. The Government of Mysore refused to furnish to the State of Andhra Pradesh information regarding the daily discharge readings at the Headworks of Rajolibunda Diversion Scheme (Vide Annexures 'A' and 'B')

The above mentioned unauthorised use of water from the canal and refusal to supply the daily gauge and discharge data of the main canal and the excess utilisation by Mysore have amply justified the apprehensions of Andhra Pradesh that the Lower Irrigation interests can be protected only by having the control of the Headworks and common portion of main canal in a joint control board consisting of the representatives of the concerned States and the Government of India.

II. UNAUTHORISED USES FROM GUNDLAKERI VANKA:

Another case of unauthorised interception by Mysore was of the Power Canal waters let down through the Gundlakeri Vanka Regulator into Tungabhadra towards Krishna contribution.

The erstwhile Government of Madras and Hyderabad had come to an understanding that the Tungabhadra Reservoir should contribute to the parent River Krishna.

A quantity of 2500 cusecs including the quantity intended for contribution to the Krishna contribution is let down from the Tungabhadra Reservoir through the penstocks in the Dam and Power developed at the Dam Power House. The tail race waters are conveyed through a canal which runs 14 miles and empties into the foreby at Hampi. From the forebay, water is drawn through 2 penstocks and conveyed to the power house and power developed using the natural drop of about 100' available in the Canal.

The tail race channel carrying about 2500 cusecs then joins a small tail race pond, formed across a natural stream "GUNDLAKERI VANKA". From this tail race pond the Low Level Canal takes off just above the Gundlakeri Regulator. The Head sluice of the Right Bank Low Level Canal which is designed to carry 1780 cusecs is located at M.0/2-37 in the leading channel taking off from the tail race pond and the water for Krishna Delta Irrigation is discharged into Gundlakeri Vanka through the Gundlakeri

Regulator of which joins Tungabhadra river 2 miles below the Gundlakeri Regulator.

The Gundlakeri Vanka carrying the discharge intended for Krishna Delta crosses the Turtha channel about 3 furlongs downstream of the Regulator. Mysore Government have constructed a sluice with two vents in the Right Bank of the Gundlakeri Vanka and are drawing waters intended for Krishna Delta Irrigation let into the Gundlakeri Vanka and are supplementing the discharges in the Turtha channel, below the stream crossing through a link channel. There are no gauges either in the Gundlakeri Vanka or below the sluices mentioned above to quantify this unauthorised drawal. On the day of inspection Viz., 24-10-71, this unauthorised supplementation was estimated at 50 cusecs.

It was ascertained during inspection that there are some lift irrigation schemes involving pumping of water from the foreshore of the Tungabhadra Reservoir. Information on the utilization and areas irrigated under the pumping schemes which are in operation in the foreshore of the Tungabhadra Reservoir have not been furnished by the Government of Mysore. The State of Mysore may be directed to furnish all the details of such pumping Schemes.

The foreshore Lift Irrigation schemes besides affecting the irrigation at and below Tungabhadra Dam

also reduce the life of the Reservoir by silting. The foreshore lift irrigation should be stopped forthwith.

III. ADDITIONAL UTILIZATION UNDER PRE-MOGHAL CHANNELS IN MYSORE STATE:

The Vijayanagar channels also known as the Pre-moghal channels take off from the Tungabhadra River for irrigation in the districts of Bellary, Raichur and Kurnool. The seven channels in the Raichur district were originally in the erstwhile Hyderabad State while eleven channels in Bellary and Kurnool districts were in the composite Madras State.

Consequent on the States' Reorganisation, 17 pre-moghal channels (vide annexure G) have gone to the present Mysore and one channel on the Right Side namely Rampur channel came over to Andhra Pradesh.

The demand now putforth by Mysore for the Irrigation under all the Vijayanagar channels in their State is 13.70 T.M.C., as per details given below for ayacut of 28,635 acres (excluding the Koregal channel, whose ayacut of 1534 acres got merged with the Tungabhadra Left Bank Canal).

Crop pattern	Duty acres/ Cusec.	Base period in days.	Water Requirements (TMC)
(1)	(2)	(3)	(4)
1. Khariff Paddy 50% (14,450 acs)	45	152	4.25
2. Sugarcane 50% (14,450 acres)	45	335	9.38
			13.63 or 13.70 Tmcft

(Vide Arguments of Mysore and MYK.1, P.93)

During the course of the opening arguments of the case, the State of Mysore has given that the average annual utilisation of all these channels as 5.71 TMCft. during the period 1941 to 1961 and 9.64 TMCft. during the period 1961-62 to 1968-69.

III.1 EXCESS WITHDRAWALS UNDER RAYA AND BASAVANNA CHANNELS:

With the construction of the Tungabhadra Dam, a separate sluice with vent of size 6' x 12' with sill +1550 has been provided for drawing supplies directly from the Tungabhadra Reservoir for the irrigation under the Raya and Basavanna Channels. On the left Bank, the Koregal channel is having its supply from Tungabhadra Left Bank Canal distributory No.1.

According to information given in MYDK X(i), p.3-10, the drawals from Tungabhadra Dam for the Raya and Basavanna channels alone for the years 1961-62 to 1968-69, vary from a minimum of 8.869 Tmcft. in 1963-64 to a maximum of 10.13 Tmcft. in the year 1961-62. The average annual withdrawals during the above eight year period, exclusively under the Raya and Basavanna channels having an ayacut of 8567 acres work out to 9.62 Tmcft.

The details of drawals under the other Pre-moghal channels now in Mysore are not furnished anywhere by Mysore.

The Mysore Government on the plea of repairs and improvements to Raya and Basavanna channels have been drawing unauthorised additional discharges from the

outlets of power canal @ M.7/6 and M.9/6 for which details have not been furnished.

It is the submission of Andhra Pradesh that withdrawals under Raya and Basavanna channels is much more than the irrigation requirements under these two channels worked-out on the basis of data furnished by Mysore in MYPK VI Ex.MRK 177 p.72-73 and during the course of arguments as shown below:

Name of channel.	Irrigation (Acres) (From Page 72-& 73 of MYPK VI).	Crop pattern	Acs.	Duty Acs./Cusecs.	base period (Days)	Requirements Tmcft.
(1)	(2)	(3)		(4)	(5)	(6)
1.Basavanna channel.	3067	Sugarcane	1534	45	335	1.250
		Khariff paddy	1533	-do-	152	
2.Raya Channel.	5500	Sugarcane	2750	45	335	2.755
		Khariff paddy	2750	-do-	152	
	8567					4.005

From the above table it may be seen that the water requirements under the Raya and Basavanna channels adopting the crop pattern and duties now given by Mysore work out to only about 4 Tmcft. and the required discharge as per the crop pattern works out to about 190 c/s (i.e. 8567 acres by a duty of 45 acres per cusec) whereas the present drawals into the Raya and Basavanna channels are known

to be about 425 c/s (Vide Annexure D) which work out to an annual utilisation of about 12.30 Tmcft.(for 11 months).

III.2: EXCESS WITHDRAWAL UNDER BELLA CHANNEL:

The demand under Bella channel worked out on the basis of data furnished by Mysore in MYPK-VI P.72-73 and during the course of arguments is as per table given below:

Area Irrigated (acres) (P.72-73 of MYPK-VI) (1)	Crop Pattern. (2)	Duty (Acres/ Cusecs) (3)	Base Period days. (4)	REQUIREMENTS Cusecs. (5)	Tmcft. (6)
1480	Khariff Paddy 740	45	152	17	0.223
	Sugarcane 740	45	335	17	0.492
			Total:	34	0.715
				or	0.72

Although the actual withdrawals required for the Bella Channel irrigation as per the above, works out to only about 34 cusecs, in the working tables drawn up for the operation of the Tungabhsdra Reservoir from the year 1967-68, a discharge of 200 cusecs is claimed for this channel by the State of Mysore. On the basis of the above discharges, the annual withdrawals for the ayacut under Bella channel amounts to about 6 Tmc. This is another instance to show that the State of Mysore is drawing much more water than required.

III: 3: EXCESS WITHDRAWALS UNDER TURTHA CHANNEL:

The actual demand under Turtha channel for 2230 acres of irrigation even according to the data given by Mysore as per MYPK VI P.72-73 and during the course of arguments is as under:

Area irrigated (Acres) (P.72-73 of MYPK-VI) (1)	Crop Pattern	(Acres) (2)	Duty/ acres/ Cusec. (3)	Base period days. (4)	REQUIREMENTS Cusecs (5)	Tmcft. (6)
2230	Khariff Paddy	1115	45	152	25	0.328
	Sugar-cane.	1115	45	335	25	0.724
				Total:	50	1.052

This would require a discharge of about 50 cusecs or 1.05 Tmc. The actual withdrawals of the channel from Tungabhadra River have not been furnished by the State of Mysore. As already stated above, the withdrawals into this channel from Tungabhadra Reservoir are being supplemented by unauthorised withdrawals from Gundlakeri Vanka. These unauthorised withdrawals noticed at the time of inspection work out to about 1.45 Tmc. at the rate of 50 cusecs for 11 months.

It is therefore seen that even under the four pre-moghal channels referred to above, the utilisation is aggregating to about 20.00 Tmc., as against the total demand of 13.7 Tmc. shown by Mysore for all their 16 pre-moghal channels. Andhra Pradesh apprehends that in

addition to the above four cases, Mysore is actually utilising excess quantities for irrigation under the other pre-moghal channels. These unauthorised excess utilisations will affect the existing lower down irrigation interests in Andhra Pradesh.

It is therefore necessary to restrict the utilisation under pre-moghal channels by the State of Mysore to the realistic needs and the utilisations are properly accounted for.

IV. UNACCOUNTED UTILISATION BY THE STATE OF MYSORE UNDER TUNGABHADRA LEFT BANK HIGH LEVEL CANAL.

The State of Mysore has been drawing water from the Tungabhadra Dam, through a Left Bank High Level Canal. As per the Hydraulic particulars seen near sluices on the top of the Dam, there are two high level sluices with sill at E.L. +1585.0 capable of drawing 94 cusecs each. This was also noticed at the time of Inspection.

It is understood that a quantity of 30 c/s is being drawn alround the year which will work out to about 0.90 Tmcft. In the document MYDK - X(i) P.6 the maximum so far drawn has been indicated as 0.636 Tmcft. in the year 1964-65. The quantities referred to under column (10) of the statement at pages 3-11 of MYDK X(i) have not been taken into account while putting forth their requirements of the Tungabhadra Project on the left side.

The Andhra Pradesh Government apprehends that if the statusquo regarding the control of the left side of the Tungabhadra Dam is continued this unaccounted for utilisations may be increased as there is scope for drawing as much as 188 c/s which will work out to about 5.5 Tmcft, in a year. Further the quantity drawn under this canal should form part of the utilisations of the left bank low level canal.

V. EXTENSION OF TUNGABHADRA PROJECT LEFT BANK CANAL TO ALAMPUR AND GADWAL TALUKS IN ANDHRA PRADESH:

The State of Andhra Pradesh have been claiming for a share in the Tungabhadra Left Bank Canal for the benefit of the Gadwal and Alampur taluks of old Raichur district now in Mahaboobnagar district of Andhra Pradesh.

During the inspection of the Left Bank Canal on 21-10-1971, the constructed section of the Tungabhadra Left Bank Canal at M/124 was seen at the canal crossing of Raichur-Munirabad road. The following facts support the contention of the State of Andhra Pradesh that the Tungabhadra Project as taken up by the Old Hyderabad Government included the supply of water to the areas of Gadwal and Alampur.

1) The vent way of the Bridge which indicated that the cross masonry works were constructed for carrying the additional discharge required for

the areas to be served by the Tungabhadra Left Bank Canal in Gadwal and Alampur taluks;

2) The section of the canal beyond M.128/0, where a regulator was constructed, was reduced subsequently by the State of Mysore.

3) The alignment of the Left Bank Canal beyond M.128/0 was changed and a series of drops provided subsequently by the State of Mysore in order to restrict the length and tail the canal into a tank at a Lower Level.

In this connection it is also submitted that at the time of inspection, the representative of Mysore was requested to furnish the following information.

(a) The section and hydraulic particulars of the canal in the reaches at M.124, at Mile 128 and at M.141 as shown by erstwhile Hyderabad State and as now constructed.

(b) The ayacut served in the reach between ..128 and M.141 and the provision of drops below M.128.

(c) The distance of Mysore - Andhra Pradesh border from the last point of the main canal.

During the inspection of the model room at the right flank of the Tungabhadra dam on 28-10-1971, a map of the Tungabhadra Project as/per Project Report" "As

was seen. In the said map, the extension of the Left Bank Canal was shown dotted. But the words 'AS PER PROJECT REPORT' and the dotted portion of the Canal alignment appear to have been erased.

Originally there was provision for 4 generating units in the Power House on the Left Bank, as 4 penstocks were already installed in the Dam. But only 3 units were installed and the 4th Penstock was blocked. The State of Andhra Pradesh submits that the 4th Penstock was blocked with a view to prevent the supply of Power in which they had a claim to share as per the original scheme.

VI. NON-PROVISION OF RIVER SLUICES IN PROJECTS IN UPPER STATES.

In the utilisation of the Waters of an Inter-State River and its Tributaries, it is very essential that NEW UTILISATIONS HAVE TO BE ADJUSTED AS NOT TO INTERFERE WITH THE EXISTING DAILY UTILISATIONS FOR THE EXISTING WORKS AND THE AGREED UTILISATIONS FOR NEW WORKS.

The essential means of regulating the river waters for meeting the utilisations in the Lower States is by the provision of River sluices of adequate discharging capacities in the Projects under construction, by the Upper States.

KOYNA PROJECT :

The State of Andhra Pradesh have also clearly brought out in their statement of case (item V on P.41-43 of APK Vol.I) that adequate river sluices in the Koyna Dam were not provided.

BHADRA RESERVOIR PROJECT :

In the Bhadra Reservoir Project (KGC Annexure-IX MR-28) adequate river sluices have not been provided.

The Andhra Pradesh State have sought for the requisite reliefs in this regard (vide item No.14 on p.136 of APK Vol.I).

VII. 1. TATA HYDEL POWER SCHEMES :

During the inspection of Tata Hydel Power Station at Khopali and the Walwan storage reservoir it was learnt that the reservoir was intercepting the entire flow of the river and had surplused only once in the last ten years. The Dam had no river sluices. It was also learnt that same was the case with regard to the other reservoirs of these Power Schemes. This would mean complete elimination of the catchment areas of these reservoirs as far as Krishna River supplies are concerned in more than 90 % of the years. Andhra Pradesh submits that the above factors should be taken into consideration in the allotment of the share in the dependable flow to Maharashtra.

VII.2: UJJAINI DAM :

No river sluices are being provided in the Ujjaini

Dam acress Bhima river which is under construction in the Maharashtra State. Maharashtra Engineer incharge of the construction of the Dam confirmed the above during the inspection of the Dam site.

Non-provision of the river sluices in the Dam of this Reservoir which intercepts large catchment of 5736 Sq.miles with a heavy and assured rainfall will deprive the Andhra Pradesh State of its legitimate irrigation requirements particularly in the early months of the monsoon and in years of low flows. Necessary directions may be given for the provision of adequate river sluices in the Ujjaini Dam.

VII. 3 : MYSORE STATE :

Upper Krishna Project :

(i) ALMATTI DAM :- During the Inspection of the Almatti Dam on 25-10-1971, the Mysore Officer stated that since they are tackling only the foundation, the question of provision of river sluices has not been considered. A reference to the plans which were exhibited (styled as tentative plans) indicated the full sections of the Dam without any river sluices.

It is the submission of Andhra Pradesh that copies of the approved drawing of the Almatti Dam may be called for and the provision of adequate river sluices considered.

(ii) NARAYANAPUR DAM: As per the sanctioned project report there is provision of 12 Nos. river sluices of

8' x 10' (MYPK VOL.I P.33). During the inspection no detailed plans of the Dam indicating the provision of the river sluices referred to above were made available. As it is understood that there has been some revision of the Narayanapur Dam Plans and the scope of the Project subsequent to the sanction, the plans showing the position and Numbers of rivers sluices in the Dam under-construction may be called for to ensure provision of adequate river sluices for safeguarding the interests of Andhra Pradesh.

VII. 4 : HIDKAL DAM : At the Hidkal Dam site across Ghataprabha, it was enquired whether river sluices were provided. The Mysore Representative replied that no river sluices were provided as it is proposed to use the entire 75 % yield under Stages III and IV of the Ghataprabha Project.

VII. 5 : MALAPRABHA PROJECT : At the Malaprabha Project site, only one sluice is provided in the Central Pier of the Spillway Block and is said to be for meeting the requirements of Lower Irrigation under Kolchi Weir. But according to the sanctioned report (MYPK Vol.2 P.xvii and pages 33-34) 4 openings of 6' x 9' at E.D. +2000.00 are to be provided as under sluices. The Mysore Representative stated that the project is being planned to use the full 75 % dependable yield of the river at the site.

VIII. The foregoing facts indicate that the Upper States desire to utilise the entire 75% dependable yield of the river at the respective sites.

The State of Andhra Pradesh submits that if adequate river sluices are not provided in the Dam for letting down water, the irrigation in the State of Andhra Pradesh suffers.

The State of Andhra Pradesh prays that this Honourable Tribunal may be pleased to -

(1) Direct that the control and management of the following works be vested in a Joint Control Board consisting of the representatives of the concerned States and the Government of India:

(a) The Headworks of the Rajolibunda Diversion Scheme and the portion of the main canal under the said Scheme within the State of Mysore;

(b) The Left side of the Tungabhadra Dam and the sluices in the Dam on the left side of Tungabhadra;

(c) The Left Bank Low Level Canal within the Mysore State;

(d) The Tungabhadra Dam Power House on Hunirabad side;

(e) Regulation, inspection and control of withdrawals into the Vijayanagar or Pre-moghal channels;

(2) To declare that the Tungabhadra Project taken on hand prior to November, 1956, included the supply of 19.2 TMC of water for irrigating areas in Gadwal and Alampur under the Left Bank Canal and include the same in the share of the State of Andhra Pradesh and given such other or further appropriate direction in this regard;

(3) Direct the States of Maharashtra and Mysore to provide adequate River Sluices in all Dams and Anicuts in those States to ensure timely supplies to the State of Andhra Pradesh.

NEW DELHI
Dt. -1-1972.

(H.SITARAMA SASTRI)
SPECIAL OFFICER: WATER RESOURCES
GOVERNMENT OF ANDHRA PRADESH

ANNEXURE 'A'.

GOVERNMENT OF ANDHRA PRADESH
PUBLIC WORKS DEPARTMENT.

Letter No.508-P2/65-1 Dated 12.2.1965.

From
Sri G.A.[illegible] M.A.O, B.E., A.M.I.E.,
Additional Secretary to Government.

To
The Secretary to Government,
Public Works & Electricity Department,
Government of Mysore, Vidhan Soudha,
BANGALORE.

Sir,

Sub:-- Irrigation--Major Irrigation--Rajolibunda anicut scheme--daily gauge and discharge data recorded at the head works--furnishing of--requested.

...

I am directed to state that the Rajolibunda Anicut scheme situated in between the Tungabhadra Dam and the Sunkesula anicut across the Tungabhadra River was executed by the erstwhile Hyderabad Government for irrigating a total extent of 92,900/- acres on the left side for a withdrawal of 17 Tmcft. Consequent on the reorganisation of States in the year 1956, the Rajolibunda anicut headworks along with the first 27 miles of the Left Bank Canal taking off therefrom now lie within the territory transferred to Mysore State. The area to be benefited under the project in the present Mysore State is 5,900 acres while the balance of 87,000 acres of irrigation lies in Andhra Pradesh. The withdrawals for irrigating the above extents in Mysore and Andhra Pradesh States being about 1.0 and 16.00 Tmcft. respectively. The Andhra Pradesh State have now a predominantly major interest in this Scheme.

2. The Government of Andhra Pradesh are therefore interested to know the full details of the observed gauge and discharge data at the R.D.S. anicut and the quantity drawn into the left bank canal through the head sluice at the

212

headworks and those let down into the river over the anicut and through the undersluices.

I am therefore directed to request you kindly to issue necessary instructions urgently to the concerned officers in charge of the Rajolibunda Diversion Scheme headworks to intimate the Chief Engineer (Major Irrigation) of this State, telegraphically, about the details of daily gauge and discharge data at the Rajolibunda Diversion Scheme anicut, observed at 6-00 A.M. indicating:

(i) the flow over the anicut and through the under sluices, and

(ii) the discharges into the left bank canal through the head-sluice.

I am to request that a reply as to the arrangements made for the supply of the above data to Chief Engineer, Major Irrigation may kindly be sent to this Government at an early date.

Yours faithfully,
Sd/- J.Venkataramana Naidu
for Additional Secretary to Government.

Copy to
Chief Engineer, Major Irrigation and General,
Hyderabad.

Copy to 'I' section in Public Works Department.

(True Copy)

Sd/- xxx
SECTION OFFICER.

//True Copy//

ANNEXURE 121

GOVERNMENT OF MYSORE.

No.PWD 3 IRD 65

MYSORE GOVERNMENT SECRETARIAT,
VIDHANA SOUDHA,
Dated, Bangalore 17/21 Apr. 65.

From

The Secretary to the Government of Mysore,
Public Works & Electricity Department

To

The Secretary to the Government of Andhra Pradesh,
Public Works Department,
Hyderabad.

Sir,

Sub: Irrigation - Major Irrigation - Rajolibunda anicut scheme - daily gauge and discharge data recorded at the head works - furnishing of - requested.

I am directed to refer to your letter No.508-P2/65-1 dated 12-2-1965 on the above subject, and to state that as the required discharge in the Rajolibunda Diversion Scheme Canal at the border between Andhra Pradesh and Mysore State could be maintained, the question of furnishing daily gauge readings at the Head Works to Andhra Pradesh does not arise.

Yours faithfully,
sd/ M.Channappa 20-4-1965
(M.CHANNAPPA)
Deputy Secretary to Government,
Public Works Department (Irrigation

(True Copy)

ANNEXURE 'C'

STATEMENT SHOWING THE DETAILS OF VIJAYANAGAR CHANNELS IN MYSORE STATE.

::::

(Extracted from M.Y.P.R.Vol.VI - Pages 72-73).

Sl. No.	Name of the Channel.	Area Irrigated in acres.	Remarks.
1	2	3	4
	BELLARY DISTRICT :		
1.	Basavanna Channel. ..	3067	Channels take off directly from T.B. Dam on right side.
2.	Raya Channel. ..	5500	
3.	Bella Channel. ..	1480	
4.	Kalaghatta Channel. ..	555	
5.	Turtha Channel. ..	2230	
6.	Ramasagar channel. ..	1688	
7.	Kampli Channel. ..	1540	
8.	Belagoduhal Channel ..	520	
9.	Siruguppa Channel. ..	2360	Consists of 7 bits.
10.	Desnur Channel. ..	1391	
		20331	
	RAICHUR DISTRICT :		
1.	Koregal Channel. ..	1534	Now merged in the T.B.P. L.B.C. Ayacut.
2.	Hulgi Channel. ..	665	
3.	Shivapur Channel. ..	977	
4.	Anegundi Channel. ..	2200	
5.	Upper Gangawati Channel.	1920	
6.	Lower Gangawati Channel.	1892	
7.	Bichal channel. ..	660	
		9838	
	Grand Total. ..	30169	

Note:- The total area under all the Vijayanagar Channels excluding the Koregal Channel is 28,635 acres.

ANNEXURE 'D'

209

Shri Satyanarayan Singh,
Superintending Engineer, P.W.D.,
(Irrigation Branch, T.B.Board.

TUNGABHADRA DAM,
(Via Hospet),
Bellary District,
Mysore State.

Letter No. N.G.12/HD/3699/M/Dated: 17-11-1971.

To

The Special Officer,
Water Resources,
Irrum Manzil, Hyderabad-4.

Sir,

Sub: T.B.P. - Working Table for 1971-72 - Drawals through Raya-Basavanna Channel - Regarding.

Ref: Your letter No.Rc.H1/46163/70-4 dated 3-7-1971; addressed to the Secretary, T.B.Board, T.B.Damsite.

The release of water through Raya-Basavanna Channel at the Head Regulator is now 425 cusecs according to current meter gaugings. This is because a certain water level in this channel is being insisted upon by the Government of Mysore instead of a specified discharge according to the Working Table. The whole matter is under the consideration of the Tungabhadra Board. A copy of interim orders issued from Tungabhadra Board through Memo.No.10929/B1/65-7/ dated 12-7-1971 is enclosed, which partly explains the position. The releases now being made are therefore purely adhoc.

Yours faithfully,
(Sd.) 17-11-1971
Superintending Engineer
(Irrigation Branch) T.B.Board
Tungabhadra Damsite P.O.

Enclosure:-

1 copy of letter

(True Copy)

Copy of Memorandum No.10929/B1/65-7, dated 12-7-1971 from the Secretary, Tungabhadra Board, Tungabhadra Damsite (P.O)::To the Chief Engineer, (Irrigation Branch), Tungabhadra Board, Tungabhadra Damsite (P.O).

Sub: Tungabhadra Reservoir - Regulation of water in Raya and Basavanna Channel.

Ref: This Board's letter No.10929/B1/65-6, dated 30-6-1971 addressed to the Secretary to the Government of Mysore, Public Works Department with a copy to the Chief Engineer (Irrigation Branch), T.B.Board.

The Secretary to the Government of Mysore, Public Works and Electricity Department in his letter No.PWD.22-MTB-71/dated 25-6-1971 has stated that discharges into Raya-Basavanna Channel are being regulated by the Board with reference to the gauge discharge curve prepared by the Board. He has further stated that it is desirable that in such cases the gauge discharge relations are studied and established jointly by the Tungabhadra Board and the Mysore Government and therefore requested that till the matter is discussed with the Chief Engineer, Irrigation (South), Bangalore by the Chief Engineer (Irrigation Branch) of the Board, the usual levels in the Raya-Basavanna Channels may please be continued to be maintained.

(2) In the circumstances, the original gauge, before conducting the gaugings in Raya-Basavanna Channel, may be maintained purely on adhoc basis and until further orders from this office to save standing crops.

(3) The Chief Engineer (Irrigation Branch) is requested to take immediate action in the matter.

(Sd) x x x
Secretary, Tungabhadra Board.

CC:- i) The Secretary to the Government of Mysore, Public Works & Electricity Department, Bangalore.

ii) The Administrator, Tungabhadra Project, Munirabad.

iii) The Chief Engineer, Irrigation (South), Bangalore.

iv) The Superintending Engineer, (Irrigation Branch), Tungabhadra Board, Tungabhadra Damsite.

v) The Superintending Engineer, T.P.Circle, Munirabad.

vi) The Executive Engineer No.1, T.B.Division, Munirabad.

vii) The Executive Engineer, Head Works & High Level Canal Division, Tungabhadra Dam.

viii) The Assistant Engineer, Head Works Sub-Division, T.B.Dam.

(True Copy)

sd/- xx xx 17/11.

Personal Assistant
to the Superintending Engineer.
(L.B) T.B.Board, Tungabhadra Dam.

(True Copy)

Government of Mysore

No.WRD PR TBL

Office of the Chief Engineer, PWD.
Water Resources Development Orgn.
Bangalore-9, dated 21st Decr.'71.

The Secretary to the Government of Mysore,
Public Works & Electricity Department,
Vidhana Soudha,
B_a_n_g_a_l_o_r_e_-_1 .

50693....
23

Sir,

Subj:- Note detailing the impressions of the Chief Engineer Irrigation (North), Dharwar about the visit of Krishna-Godavari Tribunal.

Refr:- Government letter No.PWD 77 BRA 70, dated 23.11.1971.

.....

With reference to Chief Engineer, Irrigation Projects (North)'s note, I furnish my remarks as follows:-

R E M A R K S

Para (i) : We have argued that the 75 percent dependable yield is 2176 Tmcft.,on the basis of the model experiments at the Khadakwasla Research Station of the Central Water & Power Commission and the gauge data of Vijayawada Anicut.

Para (iv) (1.1) : Mysore has already prayed in its statement of case that a quantity of 1430 Tmcft of Krishna waters (taken at 75 percent dependability) should be allocated to Mysore and further, in other years of more or less than the dependable yield also, allocations must be done in the same proportion; namely the proportion which 1430 Tmcft bears to the dependable yield.

The three States in the Krishna basin have also agreed that certain existing utilisations and certain sanctioned projects should be protected, although they have not mentioned the dependability for such protection. It is seen that some of these sanctioned schemes which are agreed for protection have been sanctioned for utilisations on the basis of yield, at the project sites, at 75 percent dependability. On the other hand, Andhra Pradesh has pleaded that its ancient irrigation should be ensured supplies even on daily basis. They seem to suggest that they should be given protection for such ancient utilisations

pto

on 100 percent dependability basis. Schemes like Nagarjunasagar of Andhra Pradesh, Krishna, Warna, Kukadi and Bhima (Ujjani) projects of Maharashtra have not been sanctioned on the basis of 50 percent dependable yield. In the circumstances, there is no particular advantage in pressing for considering the allocable yield at 50 percent dependability.

Para (iv) (1.2) : As regards the water allowance per lakh acres for irrigated areas, Mysore has asked for 1430 Tmcft. for a total irrigation area of 84.3 lakh acres. This works out to an average of 17 Tmcft. per lakh acres for both existing and proposed projects together. There has been a general agreement amongst the States before the Tribunal that an average utilisation of 18 Tmcft per lakh acres of irrigated area may be considered for proposed projects.

As regards the scarcity areas, we have argued in our Rejoinder to the Statement of Case of Maharashtra, that the rational way of providing for scarcity areas would be to set apart a quantum of water of the Krishna basin to meet the deficiency of rainfall in the scarcity area. This point, of course, will be reiterated in the final arguments.

Para (iv) (1.2) We have already pleaded this point in our Rejoinder to Maharashtra (para 41, MYK-IV)

Para (iv) (1.3) : Witness on behalf of Maharashtra has deposed that a definite advantage of higher utilisations to the extent of 120 Tmcft over and above the dependable supplies exists by making use of the carry-over storage capacities of 180 Tmcft in Srisailam and Nagarjunasagar reservoirs. Independent detailed studies regarding carry-over advantages have also been made by Mysore for the Krishna river system as a whole as well as for parts of the sub-basins in Mysore. These are being incorporated in our final arguments.

Para (iv) (1.4), (1.5) and (1.6) : Although the Tribunal will consider the requirements of the States at 75 percent dependability in point of fact, actual sharing of waters has to be done every year and not only in a year of dependable supply. 74 years will bring in yields which will be more than the dependable yield. Therefore, allocations of waters of each year will have to take the shape of a proportionate share - the same proportion as that fixed for the yield of the dependable year. This method of allocation will ensure to each State its share in surplus as well as deficit years. Therefore, no question of a lower State utilising all the surplus would arise.

It will, of course, be urged before the Tribunal that such unused waters of the upper States as may be utilised by the lower States temporarily, shall not give any legal rights to the lower States for continuing such utilisations permanently.

...3.

The undersigned favours control of all structures utilising above 3 to 5 Tmcft annually. A central agency for supervising the regulation in the entire basin will be an absolute necessity. A separate note has been prepared by me in this behalf.

Para (iv) (1.7) : If allocations are made as a fixed proportion of the yield each year to each State, perhaps there is no need for revising the allocation again since planning irrigation projects by the States done during the intefvening period may become completely upset in case of such future revisions. Making of allocation in a fixed proportion of the annual yield to States to plan irrigation projects within their territory, on several tributaries at such dependability as they deem fit. This of course, can be done by them as they gain a more precise knowledge of the yield of streams by current meter gauging for 10 to 15 years atleast.

The other view is that a revision could be made, say after 30 years. This revision I feel could only be for adjustments of the shares of the States in respect of only the surplus flows and which are expected to be available mainly on account of regeneration after full development of irrigation in the entire basin. Thus, for instance, if the average yield today is estimated at 2450 Tmcft and if it would be, say after 30 years, 2800 Tmcft., only revision of the share of this surplus flow namely 350 Tmcft could be considered. The proportion already fixed for flows upto 2450 Tmcft need not be unsettled. As regards such surplus flows that might be found to occur, most of them could only be attributed due to regeneration. We may urge that these may be shared during years when they occur in future, in the proportion of the quantity of utilisation by each State within the Krishna river basin (water-shed). Till such revision, all flows in surplus or deficit years could be in the same proportion as that fixed for sharing the dependable flows.

Yours faithfully,

21/12/71

(B.C. Angadi)
CHIEF ENGINEER, WRDO.

MA.

GOVERNMENT OF MYSORE

No.PWD 77 BRA 70

MYSORE GOVERNMENT SECRETARIAT,
VIDHANA SOUDHA,

Bangalore, Dated 20.12.71 *197* .

22

FROM

The Secretary to the Government of Mysore
Public Works & Elecy.Dept.

To

The Chief Engineer,
Water Resources Development Organisation,
Bangalore.

Sir,

Sub: Note detailing the impressions of the Chief Engineer Irrigation(North), Dharwar about the visit of K.G.Tribunal.

...

In continuation of Govt.letter of even No. dt.23.11.71 I am directed to invite your attention to the discussion you had on the above subject with the Additional Secretary to Govt., Public Works & Elecy.Dept. before you left for Delhi and to request you to kindly put up the various points before the "Experts" Committee to advise Government in the matter of K.G.Water disputes" after your return from Delhi.

Yours faithfully,

O/C 20/12/71

(M.CHANNAPPA)
DEPUTY SECRETARY TO THE GOVERNMENT
PUBLIC WORKS AND ELECY. DEPARTMENT

ISSUED
=re=
Dated 22/12

20/12/71

NO. PWD 77 BRA 70.

To.

The C.E.
WRDO Bangalore.

Sir,

Sub:— Note detailing the impressions of the C.E. Irrgn (N) Dharwar about the visit of K.G. Tribunal.

In continuation of Govt. letter of even NO. dated 23.11.1971 I am directed to invite your attention to the discussion you had with the Addl. Secy; to Govt. P.W.& E. Dept before you left for Delhi, on the above Subject and to request you to kindly put up the various points before the "Experts' Committee to advise Govt. in the matter of K.G. water disputes" after your return from Delhi.

Yours faithfully,

19/11/71

18/11/71

D.S.
PWD (9).

GOVERNMENT OF MYSORE

CONFIDENTIAL.

OFFICE OF THE CHIEF ENGINEER,
Water Resources Development Organisation
Bangalore-9,
Camp: Mysore Bhavan,
Kautilya Marg,
New Delhi, dt.25th Nov.'71.

No. WRD/PR/TBL/203/71-72
Encl: 4 sheets + 1 plan

To
The Secretary to ~~the~~ Govt. of Mysore,
Public Works & Elec. Department,
Bangalore-1.

47578...

30.

Sub:- Protection to works in Vedavathy sub-basin under inter-State Streams and catchments - Agreement between the States of Mysore and Andhra Pradesh-

5778-80 1.12.71

Ref:- Govt. letter No.PWD 77 BRA 70/III, dt.7-7-71-

Sir,

I enclose herewith a copy of the orders of the Krishna Water Disputes Tribunal dated 2nd September, 1971 together with its enclosures pertaining to the agreement between the States of Mysore and Andhra Pradesh in respect of the protection to works in Vedavathy sub-basin, for information of the Government.

Yours faithfully,

25/11/71

CHIEF ENGINEER,
W.R.D.O.

30/11/71

30/11

Addl Secy
29/11

OSD 24/11

Submitted for perusal. No action is called for. The main file on the subject i.e. PWD 77 BRA 70 has been referred to Addl. Secy: on 29/11/71. Its return is awaited. This will be file in the main file.

7/12/71.

This is Very important. Pl get the main file and put up

9/12/71

Rec'd instructions from OSD to put up on return of the file from Addl Secy

10/12/71

KRISHNA 2nd September, 1971.

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL.

IN THE MATTER OF A WATER DISPUTE AND CONNECTED MATTERS REGARDING THE INTER-STATE RIVER KRISHNA AND THE RIVER VALLEY THEREOF-

...

O R D E R.

The State of Andhra Pradesh and the State of Mysore through their respective Counsel have entered into an agreement (Annexure A). The agreement is received in evidence and is directed to be marked as Exhibit without any objection.

Sd/-
(R.S.Bachawat)
Chairman.

Sd/-
(Shamsher Bahadur)
Member.

Sd/-
(D.M.Bhandari)
Member.

New Delhi:
Dated, September 2, 1971.

" COPY "

Annexure 'A'

AGREEMENT BETWEEN THE STATE OF MYSORE AND THE STATE OF ANDHRA PRADESH REGARDING PROTECTION TO IRRIGATION WORKS IN THEIR RESPECTIVE TERRITORIES IN VEDAVATHY SUB-BASIN.

...

It is agreed between the State of Mysore and the State of Andhra Pradesh that the State of Mysore will not put up any new work on the streams mentioned in Schedule (1) within the limits shown in the said Schedule and marked in the map appended herewith, without the previous consent of Andhra Pradesh to protect the irrigation interests under the existing irrigation works in Andhra Pradesh and similarly it is agreed that the State of Andhra Pradesh will not put up any new work on the streams mentioned in Schedule (2) within the limits shown in the said Schedule and marked in the map appended herewith, without the previous consent of Mysore State to protect the irrigation interests under the existing irrigation works in Mysore State.

It is further agreed between the State of Mysore and the State of Andhra pradesh that the State of Mysore will not put up any new construction on Suvarnamukhi river so as to affect the supply of Agali tank in Andhra Pradesh for the irrigation of an ayacut of 884 acres, the supplies for which are drawn from the Agali Anicut in Mysore State.

Having regard to this concession the parties are agreed that the Tribunal need not decide issue No.IV.

Sd/-
(T.Krishna Rao)
Counsel
for the State of Mysore
2.9.71

Sd/-
(P.Ramachandra Reddy)
Counsel
for the State of Andhra Pradesh
2.9.71.

Copy
27/11/71

S C H E D U L E- I.

LIST OF STREAMS ON WHICH NO NEW CONSTRUCTIONS SHOULD BE UNDERTAKEN BY THE STATE OF MYSORE WITHOUT THE PREVIOUS CONSENT OF ANDHRA PRADESH:

...

Sl. No.	Name of the Stream or Catchment	Location in the Map.	Limits within which no new construction should be undertaken by Mysore without the previous consent of Andhra Pradesh.
1.	Hagari (Vedavathy)	A	From Vanivilas Sagar in Mysore upto Bhairavanithippa Dam in Andhra Pradesh.
2.	Dodderi tank halla (Garanihalla)	B	4½ miles up-stream of confluence with Hagari
3.	Talak tank halla (Garanihalla)	C	From the Salem-Bellary road bridge over this stream upto confluence with Hagari.
4.	Chinnahagari	D	Upto 16 miles upstream from Mysore-Andhra Pradesh boundary.
5.	Amarapuram tank cathhment	E	Catchment of Amarapuram tank in Mysore State.
6.	Virapasamudram tank catchment.	F	Catchment of Virapasamudram tank in Mysore State.
7.	Yeradkere tank catchment	G	Catchment of Yeradkere tank in Mysore State.
8.	Rangasamudram tank catchment	H	Catchment of Rangasamudram tank in Mysore State.
9.	Nagalapuram tank catchment	I	Catchment of Nagalapuram tank in Mysore State.

Sd/-
(T.Krishna Rao)
Counsel
for the ~~Mysore~~ State of Mysore
2.9.71.

Sd/-
(P.Ramachandra Reddi)
Counsel
for the State of Andhra Pradesh.
2.9.71.

Copy--
25/11/71

SCHEDULE-2

LIST OF STREAMS ON WHICH NO NEW CONSTRUCTIONS SHOULD BE UNDERTAKEN BY THE STATE OF ANDHRA PRADESH, WITHOUT THE PREVIOUS CONSENT OF MYSORE.

...

Sl. No.	Name of the Stream	Location in the map	Limits within which no new construction should be undertaken by Andhra pradesh without the previous consent of Mysore State.
1.	Madalur Doddakere nale	J	Entire catchment of the nala in Andhra Pradesh.
2.	Madalur Gidaganahalli Kattenala	K	Entire catchment of the nala in Andhra Pradesh.
3.	Doddabanagere Doddakere nala	L	Entire catchment of the nala in Andhra Pradesh.
4.	Dharmapur tank nala	M	Entire catchment of the nala in Andhra Pradesh.
5.	Parasurampur Dodda-kere nala	N	Entire catchment of the nala in Andhra Pradesh.
6.	Kadehoda Achuvali-kere nala	O	Entire catchment of the nala in Andhra Pradesh.
7.	Parasurampura tank nala	P	Entire catchment of the nala in Andhra pradesh.
8.	Gowripura Palyadakere nala	Q	Entire catchment of the nala in Andhra Pradesh.
9.	Jajur tank nala	R	Entire catchment of the nala in Andhra Pradesh.
10.	Thippareddihally Kyatanakere nala	S	Entire catchment of the nala in Andhra Pradesh.
11.	Oblapur tank nala	T	Entire catchment of the nala in Andhra Pradesh.
12.	Hagari (Vedavathi)	U	Below Bhairavanithippa Dam upto Andhra Pradesh Mysore border.
13.	Chinnahagari	V	From Mysore-Andhra Pradesh border upto its confluence with Vedavathy (Hagari)

Sd/-
(T.Krishna Rao
Counsel
for the State of Mysore
2.9.71.

Sd/-
(P.Ramachandra Reddi)
Counsel
for the State of Andhra Pradesh.
2.9.71.

Copy

GOVERNMENT OF MYSORE

No. PWD 77 BRA 70.

MYSORE GOVERNMENT SECRETARIAT,
VIDHANA SOUDHA,
Dated, Bangalore, 23rd Nov. 1971.

FROM

The *Secretary to the Government of Mysore*
Public Works & Elecy.Department, Bangalore

To

The Chief Engineer,
Water Resources Development Organisation,
Bangalore.

Sir,

Subject:-Note detailing the impressions of the Chief Engineer Irrigation (North) Dharwar about the visit of K.G.Tribunal.

I am directed to invite your attention to D.O.Letter ~~of even~~ number CEN PS-71 dated 2-10-71 of the Chief Engineer Irrigation(North)Dharwar addressed to the Additional Secretary, Public Works & Elecy.Department and copy endorsed to you on the above subject, and to request you to kindly furnish your remarks in the matter at an early date.

Yours faithfully,

Sd/-
(S.K.MOHAN),
Under Secretary to Government,
Public Works & Elecy.Department.

Dated. 23/11/71

Authorised for Issue,

O/C 23/11/71

Section Officer,
Public Works & Elecy.Department.

23/11/71

BRG.19-11-71.

NO. PWD 77 BRA 70.

To The C.E.
W.R.D.O. Bangalore

Sir, Sub:- Note detailing the impressions of the C.E. Irrgn. (N) about the visit of K.G. Tribunal -

I am directed to invite your attention to D.O. letter NO. CEN- PS-71 dt. 2-10-71. of the C.E. Irrgn (North) Dharwar ~~on the above subject~~ addressed to the Additional Secy: P.W.D & E. Dept and on the above subject Copy endorsed to you and to ~~the~~ Requested you to kindly furnish your Remarks in the matter at an early date.

Yours faithfully,

U.S.
(T).

S. G. BALEKUNDRY,
B. E., B. Sc. (Edin.), M. I. E.
Chief Engineer, P.W.D,
Irrigation (North),

Dharwar,

Dt. 2nd October 1971

D.O. Letter.

No. CEN-ps-71.

My Dear Sri. Iftekhar Ahmed,

I am enclosing herewith a Note detailing my impressions about the Krishna Godavari Tribunal when they visited the North Zone. I presume this will be of help for further action in the matter.

With regards,

Yours sincerely,

S. G. BALEKUNDRY,)

Addl. Secy., PWD
No. 2585 Date 16/11

DS (I)

Shri Iftekhar Ahmed, B.E., M.S.C.(USA),

Addl. Secretary to Govt. of Mysore,
Public Works & Elecy. Dept.
Vidhana Soudha, Bangalore-1

T2315

16/11

Copy along with a copy of Note fd. to the Chief Engineer, N. R. D. C., Anandrao Circle, Bangalore-9.

4 W.C.S

GZ
4
17/11

PWD (Gl. Irrgn)
65555 Date 17.11.71

17/11

O.O. The Krishna Godavari Tribunal passed through North Zone from 24th to 28th of October 1971. My impressions regarding their current thinking are as recorded below:-

(i) Availability of waters at 75% dependability:- As per the yield analysis done by the C.W.& P.C. based on Vijayawada guages but modified according to the results of the 3-dimensional model studies at Khadakwasla are stated to be 2176 T.Mcft. (This confirms our contention that the application of standard weir formula to the Vijayawada weir results in under-estimation of at least 10% yields). However Andhra Pradesh have disputed this on one ground or the other and contended that these yields are no more than 1975 T.Mcft. Under these circumstances, the Tribunal appears to be contemplating assuming a via-media figure of 2075 T.Mcft. for the purposes of allocation. (If this happens, it may be seen that this will amount to an extra allocation of 100 T.M.cft. to Andhra Pradesh since these available waters would always be going to Andhra Pradesh. Therefore our attempts have got to be to press for acceptance of the figures of C.W.& P.C. ~~analysis~~ being an All India Body not connected with any of the States. In the alternative, even after allocating 2075 T.Mcft., detailed gauging should be continued by Central agency and the actual surplusses assessed and reallotted for use within the basin, at a future date).

(ii) Distribution of waters: With the limited availability of waters at 2075 T.Mcft., the Tribunal appears to be thinking of allotting in full 800 T.Mcft. to Andhra Pradesh on the ground that so much of utilisation has been 'committed', and 550 T.Mcft. to Maharashtra for irrigation and Koyna diversion Scheme, thus leaving only about 725 T.M.cft. for Mysore. (This would be just about 50% of our demands put forth.)

(iii) An offshoot of this has been that, they want to seriously limit Mysore's utilisation on Upper Krishna Project. With this end in view, they suggested a number of alternative courses as under:-

(1) There should be no Almatti Dam & the present Scheme of Narayanpur Dam and irrigation of 103 T.Mcft. should be final.

(2) Almatti Dam may be only a carry-over storage without any further allocations for U.K.P. over and above 103 T.Mcft.

(3) Almatti may be a Hydro-Electric Dam producing power at Almatti as well as by utilising the 150' drop beyond Narayanpur at Jaldurg.

In this connection, I indicated to them that (i) it is not possible to forego the Almatti storage for U.K.P. which cannot be reduced to any appreciable extent, (ii) any carry over storage

to be complementary to the U.K.P. itself & (iii) it may not be economically justifiable to have the storage for Hydro-electric purposes, in view of costly submergence. (Obviously, these suggestions are all prompted by Andhra Pradesh, in furtherence of their own interest, at the cost of Mysore.)

(iv) They are also contemplating an Inter-State Regulation Organisation at Almatti and Narayanpur, thus converting the U.K.P. into another Tungabhadra. Their main grounds for this are that considerable quantities of waters allotted to Andhra Pradesh have to come from the upper States. While they are keen on installing a Regulatory Control at Almatti and Narayanpur of Mysore State, they appear to be equally keen to avoid controls over the rest of the Reservoirs upstream of Almatti which they think are too many and too small. With this end in view, they appear to be ready to allot the entire yields of Ghataprabha and Malaprabha to Mysore, so that no regulation of these basins should be necessary. Perhaps they want to leave Maharashtra utilisations also uncontrolled. They want to control the main stem of Krishna in Mysore. Therefore they appeared to be allergic to any other dam like Hippargi Barrage which is also a part of Upper Krishna Stage II. Similarly they appear allergic to any scheme on river Bhima in Mysore State, as they appear to think that the entire Bhima upto Maharashtra border is tapped by Maharashtra and the stem below Maharashtra should feed the needs of Andhra Pradesh. They wanted Mysore should be satisfied with tapping only the tributaries like Kagna, Mullamari, Bennithora etc. (In this connection it was indicated that Mysore 's scheme at Hippargi is absolutely necessary, so as to provide irrigation to the northern bank of Krishna which cannot otherwise be fed. Similarly, the Bhima irrigation scheme was also necessary so as to tap the limited flows in Bhima in Mysore as well as the seepages from U.K.P. It was also pointed out that the medium schemes on the tributaries of Bhima are too small and they cannot serve the areas intended to be served by Bhima Project.)

1.0. The reasoning of all the above is obviously (i) the notion that only 2075 T.Mcft. of waters are available, (ii) Andhra Pradesh must be given at least 800 T.Mcft. and (iii) Andhra Pradesh must be ensured also with this 800 T.Mcft. Unless we attack each one of these aspects on reasonable grounds, I am afraid we would stand to suffer seriously. With this end in view, I threw out certain suggestions in respect ~~of all~~ these aspects as detailed under:-

1.1. The 75% dependability factor is not a matter which is sacro-sant for all times. The dependability factor has always borne a definite relationship with the demand for food which is governed by country's population. 40 years ago, when the population was

just half of what it is today, 95% dependability was in vogue. In fact as late as 1942 when the undersigned was studying Engineering, we were taught that every reservoir should be so planned as to fill atleast 19 out of 20 years which meant 95% dependability. By 1944 when ~~the~~ Madras, Hyderabad and old Mysore signed the 1944 Agreement regarding partial sharing of Tungabhadra waters, the assumed yield of 340 T.Mcft. corresponded to about 90% dependable flows of the Tungabhadra at the dam site (based on nearly 30 years of gauging). In 1951 when the Planning Commission attempted to distribute the waters of Krishna, they adopted 86% dependability. It is only somewhere round about 1957-1958 that the C.W.& P.C. appears to have adopted the 75% dependability which is already 14 years old. It is seen that the dependability factor is sliding down continuously in time. By now, the demands in the basin have outgrown the availability at 75%. Hence sticking to this 75% dependability and then trying to distribute the waters and that too on the basis of 'commitments' which are overdone in Andhra Pradesh and Maharashtra, ~~Mysore~~ will ~~be~~ put Mysore to a serious discount, in spite of its having best projects in the worst affected areas. It is not fair nor in the national interest that such projects in the basin should be seriously curtailed. It is therefore imperative that waters should be distributed on the basis of 50% dependability. Their only fear appeared to be that there will be the possibility of upper States using more than their share in the bad years at the cost of lower States. I indicated to them that this is a problem of regulation which has to be solved in any case, whatever dependability is to be adopted for distributing the waters and hence it cannot be a reason to discard 50% dependability. (This suggestion appears to have caught the imagination of the Tribunal and they even admitted that Maharashtra also is making a similar suggestion. Therefore, if this matter is seriously pursued and the Tribunal induced to adopt 50% dependability, much of our difficulty will be solved since the overall availability will increase by nearly 300 T.Mcft. If this water is made available to Mysore and Maharashtra, I am sure we will be able to execute atleast all our attractive Schemes.

1.2. It is noticed that the waters demanded in various Projects in various States amount to variable depths of water applied to the land - for example the projects in Mysore generally consume about 10 to 12 T.Mcft. of water per lakh of area irrigated whereas projects in Maharashtra require about 18 T.Mcft. of water per lakh acres. So also in Andhra Pradesh the waters demanded are about 13 to 18 T.Mcft. per lakh acres. (This fact the Tribunal are aware of. As early as in 1965 when Sri.M.R.Chopra was the Chairman of the C.W.& P.C., he was contemplating to adopt a uniform application of water for the entire commanded area of Projects in the Krishna basin by adjusting the cropping patterns. I pointed out this fact to

Tribunal members and recommended considering this with due modification to allow an extra application of water to the extent of deficiency in rainfall in the scarcity areas at the expense of other areas. This idea also appeared to have caught their imagination and it is quite likely that they may consider its application, if seriously pursued by us.

1.3. Regarding waters utilised outside the Krishna basin, the Tribunal appears to be of the view that there are no laws forbidding any State from diverting waters. Therefore though they are helpless in respect of old commitments, they may not favour further schemes of this type. (Even here it is necessary to see whether any laws could be invoked to deny allocation of waters to extra basin projects on the grounds such as the Tribunal has no jurisdiction over river basins other than the Krishna basin. It is quite possible for us to argue that surplus waters in the basin using huge carry-over storages in Andhra Pradesh are enough to take care of these extra basin commitments and therefore no allotments may be made for these from the dependable flows.)

1.4. Regarding the type of control, the Tribunal appears to be under the impression that it is necessary (i) to prevent the upper States to use more waters than allotted, and (ii) to let down from the upper reservoirs the proportionate flows due to the lower State. They appear to have thought there is no need to control the utilisations in the lowest State who may use the surplusses "without acquiring any rights". I pointed out to the Tribunal that since the waters allotted are not the entire flows of the river, but only those below a particular limit such as 75% dependable yields, the balance flows which need to be allocated for future use cannot be appropriated by the lower States in advance and create 'fait-accompli'. Further it is also necessary to assess these additional flows which can only be done if the entire basin is regulated under a control so that the yields in all the States are assessed and the utilisation in all the States are controlled as per allocations and the surplusses are assessed. If this is not done, the lower States will keep on appropriating all the surplusses and making further commitments in its own favour denying use of these waters to the upper States. It is quite possible that the lower State will use even the allotted waters which cannot be used by upper States for some years when the upper projects are not completed. This can be illustrated by the fact that the Andhra Pradesh has put up K.C. Canal with a huge demand of 90 T.M.cft. on Tungabhadra Project, even though it was never conceived as part of Tungabhadra Project. This they were able to do only because upper State of Mysore has been kept under check without a corresponding control on the lower State. In the name of temporary use on Krishna delta for 2nd crops,

waters were indented annually and let down only to be surreptitiously picked up at K.C.Canal in addition to using at Krishna delta. Similarly, already plans are ready to divert water to Pennar from the Srisailam dam by cutting the ridge at Mitta-Kodala. Therefore unless the lower State is also controlled in its use of waters, the same fraud could repeat in Krishna also to the detriment of upper States. As the Tribunal have now been made aware of this position, it is for our State to see that the matter is further pursued in such a manner that no unilateral control is forced on us, leaving Andhra Pradesh and Maharashtra scot-free. Our motto will have to be either there shall be a total control or no control.

1.5. Type of Regulation was also discussed. In the opinion of the Tribunal, day-to-day control of issues and utilisations similar to K.R.S. appears impracticable, as too many control points are involved in the Krishna basin. In this regard I made a suggestion that such a regulation may be effected at the end of October every year, when most of the inflows have been received in most of the reservoirs. However they appear to think there might be serious shortages felt during the monsoon period itself especially in Andhra Pradesh which needs some special consideration. These matters need to be further examined in details and some sort of satisfactory formula arrived at.

1.6. The Tribunal was also considering whether allocation of waters should be in one lump or sub-basin wise. It was realised by them during discussions that a lumpsum allocation might lead to over-drafts in particular sub-basins where the ~~needs~~ positions might be too tight and therefore they now appear to prefer sub-basin wise allocations which could be made after taking into account the availability in each sub-basin and the commitments therein.

1.7. After detailed discussions, the Tribunal also appeared to have preferred to provide for re-appraisal of the entire allocations after a specified period of 30 years.

(S. G. BALEKUNDRY,)
Chief Engineer, P.D, I. (North)

GOVERNMENT OF MYSORE

No WD 77 BRA 70 (Suppl)

MYSORE GOVERNMENT SECRETARIAT,
VIDHANA SOUDHA,
Dated, Bangalore,...5...Septr....1971

FROM

The *Secretary to the Government of Mysore*
Public Works & Electricity Department.

To

The Chief Engineer,
Water Resources Development Organisation,
Bangalore.

Sir,

Subject:- Krishna Godavari Waters Disputes
furnishing of certain particulars.

I am directed to forward herewith a copy of letter No.7480/Bl/70-7 dated 9.9.71 along with its enclosure received from the Secretary Tungabhadra Board on the above subject for your information and necessary action.

Yours faithfully,

sd/-
(S.K.MOHAN)
Under Secretary to Government
Public Works & Electricity Department.

Authorised for issue
5/10/71
Section Officer,
Public Works & Electricity Department.

mvn/7/10/71

5/10/71

TUNGABHADRA DAM
(Via Hospet),
Bellary District,
Mysore State

Dated 9-9-1971

LETTER NO. 7430/B1/70-71.

From

Shri S.R.Das,
Secretary, Tungabhadra Board.

To

The Secretary to the Government of Mysore,
Public Works and Electricity Dept.,
Vidhana Soudha, Bangalore-1.

Sir,

Sub:- Krishna Godavary Water Dispute - Furnishing of certain particulars.
Ref:- Your letter No.PWD 77 BRA 70 dated 3.8.1971.

I am directed to invite a reference to your letter cited and to enclosed herewith the Note covering the points referred to by you.

Encl: One Note.

Yours faithfully,

Sd/(Secretary)
Tungabhadra Board.

ESTIMATION OF IN-FLOW, OUT-FLOW AND WITH-DRAWALS ETC., FROM TUNGABHADRA RESERVOIR;

The daily in-flows into the Reservoir at the Tungabhadra Damsite are being worked out in-directly by estimating the daily out-flow of water through various sluices and less of water from the Reservoir due to evaporation and adding or subtracting there-from the extent of filling or depletion from the Reservoir during the same period. Expressed in the form of an equation:-

$I = O + E \pm D$ Where,

I = In-flow into Reservoir during 24 hours.
O = Out-flow from the Reservoir during 24 hours.
E = Evaporation loss from the Reservoir during 24 hours.
D = Filling of depletion in capacity of the Reservoir during 24 hours.

Estimation of out-flows(O)

Following are the out-lets from the Reservoir:-

Left Bank: (1) High level Canal
(2) Main Canal.
(3) River Out-fall sluices.

Right Bank:- (1) High Level Canal.
(2) Power Canal (Leading to Low Level Canal).
(3) River out-fall sluices.
(4) Raya-Basavanna Channel.

Common to both Banks:- (1) Spill-way

(N O T E) :- Two river slucies located on the right Bank which function very rarely are not mentioned above.

Items (2) and (3) on the Left Bank and Items(2) and (3) on the Right Bank are actually drawn through pen-stock pipes for power and after generation of power a part of the water is returned to the river through out-fall sluices for utilisation for irrigation below and the remaining, which is the major portion is let down through he Main Canals according to the needs of irrigation.

Daily discharges through out-lets on the left bank are tained from the State P.W.D. authorities. How actually these scharges are calculated by the State P.W.D. authorities is not ilable to this office.

As regards discharges through out-lets on the Right Bank controlled by the Tungabhadra Board, these are worked out as under:-

High Level Canal:- Until 11-7-1969, the discharge through the Head regulator of High Level Canal was being calculated from the following formula:- $Q = 0.8\ A\sqrt{2gH}$ or $6.4\ A\sqrt{H}$ Where Q = Discharge in casecs.

A = Area in square feet of Head Regulator opening.

H = Difference between Reservoir level and level in the canal rear of the Head Regulator at the time of observation.

The co-efficient of 0.8. adopted in the above formula was only an assumption and was not based on any model studies or direct measurement. When some gaugings were conducted in the canal in 1966, it was observed that this Co-efficient should have been near about 0.675. After review, therefore, in July 1969 this value of 0.675 pending further confirmatory tests was adopted giving rise to the formula $Q = 5.4\ A\sqrt{H}$

In November 1970, after most of the lining was completed, gauging was done in High Level Canal by current Meter and gauge discharge curve was plotted for the head reach and discharges in the High level Canal are being estimated from this gauge discharges curve from 4.12.1970. Similar gauging was done in 7/1971 also,

Working back from the observed gauge discharge curve, it is found that the factor in the formula mentioned above actually varies for different elevations of Reservoir, the average value being about 5.4. The value of 6.4 assumed earlier, therefore, was not in order.

Power Canal:- Until 30.6.1964 the discharge through the Head Regulator of the Power Canal was being calculated with co-efficient of 0.94 in the above formula giving rise to $Q = 7.5\ A\sqrt{H}$ Where H was the difference in water level above and below the Head Regulator. Later on, this equation was changed to $Q = 6.4\ A\sqrt{H}$ from 1.7.1964. Some gaugings were conducted for this canal and also in 1966 and based on the gauge discharge relationship plotted, discharge from the Head Regulator of Power Canal is being estimated from this curve from 21.1.1971.

Continued on page...3

River out-fall Sluices:- There is no means of measuring this discharge directly. It is derived from the estimate of water drawn through Pen-stock pipes by the Hydro Electric Schemes Organisation and the drawal through Power Canal is deducted there from to give the contribution to the river. The quantity of wate drawn through Pen-stocks is in turn, estimated by the Electrical Organisation under Tungabhadra Board on the basis of power generated according to charts furnished by the Suppliers of generators, assuming certain factors for electrical and mechanical efficiency of the generation. Attempts are being made to get model studies done by Mysore Engineering Research-Stations so as to be able to assess the discharge through River-out-fall sluices more accurately.

RAYA-BASAVANNA Canal:- Till 5-3-1971, the discharge throggh this Channel was being calculated according to the same formula as for High Level Canal; (i.e.,) $Q=6.4A\sqrt{H}$. Current Meter gaugings were done in February 1971 and a gauge discharge curve was since prepared and this is being followed from 6-3-1971.

Spill-way-discharge:- Till 29-7-1970, the discharge over the spill-way was being calculated according to the following formula:-

$$Q= CL(H_1^{3/2} - H_2^{3/2})$$

Where L= Length of spill-way operating.

H_1=Height of water above crest of spillway.

H_2= Height of water above gate opening.

C= Co-efficient obtained from graph 210-T-4 of Project Report of T.B.P.

The adoption of co-efficient C from the graph mentioned was not in order because the said graph was prepared for the Project Report for an un-gated spill-way as according to details given on graph 210-T-4 of the Project Report which gives; $Q= CL.H^{3/2}$ with varying values of "C" for different heads of discharges.

For the normal conditions of operation when gates are opened partly an Orifice type formula of the form $Q=C.A.\sqrt{H}$ would be appropriate. This formula has been adopted from 30-7-1970 and the co-efficient adopted is 5.8. 'H' is measured from Reservoir level to centre of gate opening.

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This co-efficient is also an assumption and is not based on Model studies. It will actually vary slightly for different conditions of head. Attempts are being made to conduct model studies for partial gate openings in order to estimate discharge more accurately.

Estimation of Evaporation(E):-

The loss of water by evaporation from the Reservoir was being estimated from the observation of evaporation from an experimental steel Pan 3' x 3' x 1.6" sunk 1' below ground level on the down-stream of Dam at the distance of about two furlongs from the Dam. Till 30-9-1970 the observed evaporation from this Pan was being directly assumed as evaporation from Reservoir without modification by an appropriate factor to account for the difference in evaporation between a small Pan and alarge Reservoir. From 1-10-1970, however a multiplying co-efficient of 0.8 is being adopted to estimate evaporation loss from Reservoir on the basis of observations from a small Pan as suggested by the Mysore Engineering Research Laboratory, Krishnarajasagar, when a reference was made to them.

Estimation of 'D':-

The volume of water between different levels of Reservoir is being calculated on the basis of contour surveys which are said to have been conducted more than 50 years ago (i.e.) long before the Reservoir was built. Actually, only three contours are said to have been survyed and values for other levels obtained by intrapolation and extrapolation.

The areas of water spread and hence the capacity between any two such water levels have under-gone a change due to siiting of the Reservoir. The Mysore Engineering Research Station, Krishnagajasagar which has conducted silt surveys of the Reservoir in 1963 found that the capacity of the Reservoir at different levels varies substantially from that was being assumed so far. Under these circumstances, the assessment of 'D' (capacity) on the basis of old data cannot be very correct.

Contd....5.

CONCLUSION:

The estimation of in-flow from the estimates of out-flow evaporation and capacity tables of Reservoir is there-fore at least very approximate. Attempts have been made from time to time to make this assessment more accurate. But unless the out-flow through River-out-fall sluices on Right Bank, discharge through spill way and the capacity of Reservoir at different contours are determined on the basis of further studies, greater accuracy cannot be achieved.

SD/-Satnaryana Singh,
7-9-1971,
Superintending Engineer,
(Irrigation Branch) T.B.Board,
T.B.Damsite-P.O.

/copy/

No. PWD 77 BRA 70. (Suppl).

To.
The Chief Engineer,
W.R.D.O. Bangalore.

Sir,

Sub:— Krishna Godavari waters disputes —
Furnishing of certain particulars.

— · —

T.P.
Please type two copies

I am directed to forward herewith a copy of letter No 7480/B1/70-7 dt. 9-9-71 along with its enclosure received from the Secy: Tungabhadra Board on the above subject for your information and necessary action.

Yours faithfully,

U.S
PWD (T).
27/9/71.

Rym in

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TUNGABHADRA DAM
(*via* HOSPET),
BELLARY DISTRICT,
MYSORE STATE

Dated 9/9/1971 *196*

LETTER NO. 7480/B1/70-7.

From

Shri S. R. Das,
Secretary, Tungabhadra Board.

To The Secretary to the
Government of Mysore,
Public Works and Electricity Dept.,
Vidhana Soudha, B A N G A L O R E--1.

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Ref: Your Lr.No.PWD 77 BRA 70 dated 3.8.1971.

I am directed to invite a reference to your letter cited and to enclose herewith the Note covering the points referred to by you.

Encl: One Note.

Yours faithfully,

9.9.71

Secretary,
Tungabhadra Board.

PWD (GI. Irrgn.) No.4378 Dated 15-9-71

36693

14/9/71

9/9/71

NOTE ON ESTIMATION OF IN-FLOW, OUT-FLOW AND WITH-DRAWALS ETC., FROM TUNGABHADRA RESERVOIR :

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Daily discharges through Out-lets on the Left Bank are obtained from the State P.W.D; authorities. How actually these discharges are calculated by the State P.W.D; authorities is not available to this Office.

(Please turn-over).

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Where; - Q = Discharge in cusecs.

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(Continued on Page—3).

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(Please turn-over).

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(Continued on Page-5).

CONCLUSION :

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(Sd) Satnarayan Singh,
7-9-1971,
Superintending Engineer,
(Irrigation Branch), T.B. Board,
Tungabhadra Damsite.P.O.

/True copy/

Personal Assistant
to the Superintending Engineer (I.B.)
T. B. Board, Tungabhadra Dam.

David.7971.

7/9/71.

KRISHNA 26TH AUGUST, 1971

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

IN THE MATTER OF A WATER DISPUTE AND CONNECTED MATTERS REGARDING THE INTER-STATE RIVER KRISHNA AND THE RIVER VALLEY THEREOF -

---

O R D E R

1. All the States through their respective Counsel and Engineers have entered into an Agreement with regard to upstream utilization excluding the utilization of the Krishna delta for the years 1901-1902 to 1950-51 for major and medium projects (Annexure A). The document is received in evidence and is directed to be marked as Exhibit without any objection.

2. All the States through their respective Counsel and Engineers have entered into an agreement with regard to minor irrigation particulars (Annexure B). The agreement is without prejudice to the rights and contentions of the parties on the question whether any minor irrigation is to be regarded as protected use or not and the parties will be free to make their submissions on that question. The document is received in evidence and is directed to be marked as Exhibit without any objection.

3. CMP No.16(56)/71-KWDT.

River charts of the River Krishna at Vijayawada filed by the State of Andhra Pradesh on 23.7.1971.

36 original river charts are received in evidence and are directed to be marked as Exhibits without any objection.

...2.

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4. CMP No.16(60)/71-KWDT.

Application of State of Maharashtra dated 28.7.1971 filing extracts from "(1) Hydraulics Research Station, the Triangular Profile Crump Weir - Two dimensional study of discharge characteristics, May 1966; and (2) Hydraulics Research Station - The Flat-Vee Weir by W.R.White, December 1966".

The documents above-mentioned are received in evidence and are directed to be marked as Exhibit without any objection.

5. CMP No.16(62)/71-KWDT.

List of further documents filed by the State of Mysore on 30.7.1971.

The documents are received in evidence and are directed to be marked as Exhibit without any objection.

6. CMP No.16(63)/71-KWDT.

Additional documents filed by the State of Mysore on 30.7.1971.

The documents filed by the State of Mysore are received in evidence and are directed to be marked as Exhibit without any objection.

7. CMP No.16(64)/71-KWDT.

Documents annexed to the Rejoinders filed by the State of Mysore vide CMP No.16(25)/71-KWDT and CMP No.16(48)/71-KwDT.

The documents above-mentioned are received in evidence and are directed to be marked as Exhibit without any objection.

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8: CMP No. 16(67)/71-KWDT.

Application filed by the State of Maharashtra on 4.8.1971 for correcting statement No.14 of Annexure 'B' to the Order dated 30.7.1971.

C.M.P. is allowed. Let the correction be made as prayed.

9. CMP No. 16(68)/71-KWDT.

Application of the State of Maharashtra dated 5.8.1971, filing the Central Water & Power Research Station's Statistical Note of January, 1968 which has already been taken on record and marked as exhibit MRK-213.

No order, since the document has already been exhibited and mentioned in the petition.

10: CMP No. 16(69)/71-KWDT.

Application of the State of Maharashtra dated 5.8.1971 filing relevant extracts, togetherwith the Books mentioned therein.

The documents above-mentioned are received in evidence and are directed to be marked as Exhibit without any objection.

11. CMP No. 16(70)/71-KWDT.

Documents filed by the State of Maharashtra on 5.8.1971 with regard to the cost of generation of electricity by Hydro and Thermal Projects.

The documents above-mentioned are received in evidence and are directed to be marked as Exhibit without any objection.

The original river charts have been produced and admitted in evidence. In respect of the rest of the documents admitted in evidence today and directed to be marked as exhibit, production and proof of the

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ANNEXURE 'A'

order dt. 26.8.71

Abstract No.1

Consolidated abstract of figures of gross upstream utilisations excluding the utilisations of the Krishna Delta for the year 1901-02 to 1950-51 for major and medium projects in the basin states of the Krishna Basin as agreed to during the joint discussions of Engineers of Maharashtra, Mysore and Andhra Pradesh on 29-7-71 & 30.7.71 for purpose of computing upstream utilisations only. (Figures for protected uses have been separately given).

Sr.No.	Year	Total utilisation in Maharashtra, Mysore and Andhra Pradesh.	Sr. No.	Year	Total utilisation in Maharashtra, Mysore and Andhra Pradesh.
1.	2.	3.	1.	2.	3.
1.	1901-02	55.84	14.	1914-15	73.09
2.	1902-03	56.10	15.	1915-16	63.47
3.	1903-04	56.36	16.	1916-17	63.47
4.	1904-05	56.62	17.	1917-18	63.47
5.	1905-06	56.88	18.	1918-19	71.30
6.	1906-07	59.82	19.	1919-20	71.30
7.	1907-08	60.45	20.	1920-21	71.30
8.	1908-09	60.83	21.	1921-22	71.30
9.	1909-10	61.18	22.	1922-23	82.00
10.	1910-11	61.59	23.	1923-24	82.00
11.	1911-12	61.96	24.	1924-25	82.18
12.	1912-13	62.34	25.	1925-26	82.27
13.	1913-14	62.72	26.	1926-27	82.63

Sr. No.	Year	Total utilisation in Maharashtra, Mysore and Andhra Pradesh.	Sr. No.	Year	Total utilisation in Maharashtra, Mysore and Andhra Prasesh.
1.	2.	3.	1.	2.	3.
27.	1927-28	93.28	41.	1941-42	137.95
28.	1928-29	93.20	42.	1942-43	139.13
29.	1929-30	118.78	43.	1943-44	151.48
30.	1930-31	122.79	44.	1944-45	149.94
31.	1931-32	125.79	45.	1945-46	147.95
32.	1932-33	128.76	46.	1946-47	151.44
33.	1933-34	131.75	47.	1947-48	150.26
34.	1934-35	134.73	48.	1948-49	152.22
35.	1935-36	137.70	49.	1949-50	146.95
36.	1936-37	140.37	50.	1950-51	152.80
37.	1937-38	143.59			
38.	1938-39	144.17			
39.	1939-40	144.75			
40.	1940-41	145.07			

(1) Figures in col.3 are based on figures supplied by Central Water and Power Commission to the three States vide Central Water and Power Commission letter No.KGC.21 (9)/65, dated 6-12-1965.

Abstract No.2

Consolidated abstract of figures of gross upstream utilisations (excluding Krishna Delta utilisations) for the year 1951-52 to 1968-69 for major and medium projects in the basin states of the Krishna Basin as agreed to (except to the extent indicated in the foot-note) during the joint discussions of Engineers of Maharashtra, Mysore and Andhra Pradesh on 29-7-1971 and 30-7-1971 for purpose of computing upstream utilisations only. (Figures for protected uses have been separately given).

Sr. No.	Year	Maharashtra (Statement No. 1)	Mysore (Statement No. 2)	Andhra Pradesh (Statement No. 3)	Total
1.	2.	3.	4.	5.	6.
1.	51-52	85.29	21.36	55.06	161.71
2.	52-53	85.94	21.36	49.30	156.60
3.	53-54	91.60	35.50	67.48	194.58
4.	54-55	94.92	35.29	60.31	190.52
5.	55-56	97.30	43.10	55.74	196.14
6.	56-57	102.70	49.31 (48.17)	63.09	215.10 (213.96)
7.	57-58	102.26	65.70 (63.96)	74.08	242.04 (240.30)
8.	58-59	106.55	70.35 (67.87)	87.72	264.62 (262.14)
9.	59-60	115.81	81.57 (77.17)	90.06	287.44 (283.04)
10	60-61	112.00	92.19 (82.61)	112.16	316.35 (307.37)
11	61-62	124.18	89.65 (85.44)	104.31	318.14 (312.93)

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Sr. No.	Year	Maharashtra (Statement No.1)	Mysore (Statement No.2)	Andhra Pradesh (Statement No. 3)	Total
12.	62-63	117.14	92.55 (89.16)	114.06	323.75 (320.36)
13.	63-64	162.01	101.98 (95.65)	120.10	384.09 (377.76)
14.	64-65	166.63	108.00 (100.62)	112.09	387.32 (379.34)
15.	65-66	168.12	129.93 (119.35)	123.68	421.73 (411.15)
16.	66-67	195.42	165.87 (147.90)	140.64	501.93 (483.96)
17.	67-68	211.43	188.11 (168.20)	243.87	643.41 (623.50)
18.	68-69	204.16	202.85 (182.87)	314.65	721.66 (701.68)

Notes:- (1) The figures given in brackets are according to Andhra Pradesh's estimates of utilisations of Mysore's Tungabhadra Project Left Bank Canal and Bhadra Reservoir, the figures outside brackets being Mysore's estimates with which Maharashtra have agreed.

5 - STATEMENT NO.1

Krishna Basin yearwise gross utilizations of Major and Medium Project in Maharashtra for the period 1951-52 to 1968-69 as discussed and agreed in the meeting of Engineers on 29-7-1971 and 30-7-1971.

Sr. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
1.	Tata Hydro Electric Schemes (Including lake losses)	7.90	6.67	7.62	6.57	7.5[illegible]	9.44	6.64	8.49	10.04	7.77	11.10	8.73	8.59
2.	Andhra Valley Power Station (Including lake losses).	7.96	9.05	8.70	9.30	9.71	11.01	10.42	11.51	13.26	9.71	14.17	9.70	11.14
3.	Mulshi lake (Including lake losses)	24.85	25.37	26.22	28.36	28.09	29.19	26.34	26.92	27.43	27.53	32.49	31.24	30.35
4.	Mutha System Ex. Khadakwasla (Including lake losses)	5.36	5.10	5.90	6.61	5.86	5.38	5.36	5.10	5.02	5.28			
5.	NiraSystem Ex. Vir (Including lake losses)	30.74	33.98	37.27	33.95	35.02	33.73	35.91	33.66	35.48	36.21	39.28	36.39	39.81

Sr. No.	Name of Project	64-65	65-66	66-67	67-68	68-69	Remarks
1.	Tata Hydro Electric Schemes (Including lake losses).	7.16	6.61	4.95	5.92	6.26	For 51-52 Average utilisation is taken from K.G.C. Annexure VIII page 57-59. 52-53 to 60-61 withdrawals taken from K.G.C. Annexure IV, page 12 to 13 and Lake losses from Annexure VIII, page 57. 61-62 to 67-68 MRDK-V page 34-40. For 68-69 May withdrawals (which are Not Available) are taken as Average of 61-62 to 67-68 and are added to other months.
2.	Andhra Valley Power Station (including lake losses).	8.63	9.40	6.98	8.22	6.46	1951-52 to 1960-61 K.G.C. Annexure IV page 14-15 and Annexure VIII page 60. 1961-62 to 68-69 MRDK Vol.V page 44-51.
3.	Mulshi Lake (including lake losses)	30.44	29.10	25.27	28.39	24.29	1951-52 to 1960-61 K.G.C. Annexure IV, pages 16-17 and Annexure VIII, page 62 & 61-62 to 68-69 MRDK Vol.V, page 54-61.
4.	Mutha System Ex. Khadakwasla (including lake losses).	0.62	3.47	3.82	5.84	6.84	1951-52 to 1960-61 K.G.C. Annexure IV, page 18-21 and Annexure VIII, page 64. 1961-62 to 68-69 MRDK Vol. V, page 64-71.
5.	NiraSystem Ex.Vir (including lake losses).	39.38	40.89	41.98	46.34	45.51	1951-52 to 1960-61 K.G.C. Annexure IV, page 24-27 and Annexure VIII, page 77. 1961-62 to 1968-69 MRDK Vol.V, page 86-93. Lake losses at Bhatghar are assumed to be average losses given at page 77 of K.G.C. Annexure VIII

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Sr. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
6.	Ghod Dam Project (Including lake losses)	-	-	-	-	-	-	-	1.36	3.03	2.65	3.00	3.36	3.57
7.	Visapur(Including lake losses)	0.93	0.19	0.24	0.24	0.57	0.67	0.63	0.63	0.58	0.69	0.50	0.50	0.50
8.	Ashti Tank (Including lake losses)	0.82	0.44	0.55	0.58	0.59	0.67	0.82	0.68	0.91	0.86	0.70	0.70	0.70
9.	Ekruk tank (Including Sholapur Water Supply).	2.38	2.29	2.21	2.13	2.03	1.98	2.03	2.22	2.18	2.16	2.10	2.10.	2.10

Sr. No.	Name of Project	64-65	65-66	66-67	67-68	68-69	Remarks
6.	Ghod Dam Project (including lake losses)	3.21	4.85	6.07	8.31	8.93	From 1958-59 to 60-61 withdrawals have been worked out from area irrigated given at page 50 of Annexure IX with Average duty of 7.4 acres/Mcft. ($\frac{62.4}{8.43}$ = 7.4). Losses given at page 45 of Annexure IX. Losses are proportionately assumed. Withdrawals for 61-62 and 62-63 are assumed. For years 63-64 to 68-69 withdrawals and losses are as given in MRDK Vol.V pages 77-82.
7.	Visapur(including lake losses)	0.50	0.50	0.50	0.50	0.50	1951-52 to 1960-61 withdrawals are as per K.G.C. Annexure IV, page 22-23 and losses as given at page 72 of K.G.C. Annexure VIII. From 1961-62 to 1968-69 withdrawals are as given in Annexure VIII page 74.
8.	Ashti Tank (including lake losses).	0.70	0.70	0.70	0.70	0.70	1951-52 to 1960-61 withdrawals are taken from K.G.C. Annexure IV page 30-31 and losses from Annexure VIII page 90. From 1961-62 to 1968-69 withdrawals are taken from Annexure VIII page 92.
9.	Ekruk tank(including Sholapur Water supply)	2.10	2.10	2.10	2.10	2.10	Withdrawals are taken from 1951-52 to 1960-61 K.G.C. Annexure IV 32-33 pages and losses as given in Annexure VIII page 102. 1961-62 to 1968-69 withdrawals are taken as average from Annexure VIII page 104. Sholapur water supply - see K.G.C. Annexure VIII page 106.

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Sr. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
10.	Mhaswad Tank (Including lake losses)	2.89	1.54	1.84	1.40	1.81	2.72	2.86	2.06	2.61	2.79	2.20	2.20	2.20
11.	Mangi Tank (Including lake losses)	-	-	-	-	-	-	0.36	0.44	0.60	0.45	0.75	0.85	1.10
12.	Khasapur Tank (Including lake losses)	-	-	-	0.40	0.50	0.60	0.70	0.80	0.86	0.92	1.02	1.30	1.30
13.	Kurnoor Project (Including lake losses)	-	-	-	-	-	-	-	-	-	-	-	-	-
14.	Krishna Canals Ex-Khodshi(Including lake losses)	1.46	1.31	1.05	1.12	0.90	0.16	0.41	1.83	2.49	3.02	3.19	2.81	4.20
15.	Koyna Hydro Electric Project (Including lake losses)	-	-	-	-	-	-	-	-	-	-	1.43	6.43	49.33
16.	Radhanagari Project (Including lake losses)	-	-	-	4.26	4.63	7.15	9.78	10.85	11.02	11.96	12.25	10.73	7.12
Total:-		85.29	85.94	91.60	94.92	97.30	102.70	102.26	106.55	115.81	112.00	124.18	117.14	162.01

Sr. No.	Name of Project	64-65	65-66	66-67	67-68	68-69	Remarks
10.	Mhaswad Tank (Including lake losses)	2.20	2.20	2.20	2.20	2.20	Withdrawals for period 1951-52 to 1960-61 as per K.G.C. Annexure IV pages 28-29 and losses from Annexure VIII, page 95. Withdrawals 1961-62 to 1968-69 as average as given in K.G.C. Annexure VIII page 95
11.	Mangi Tank(Including lake losses)	1.10	1.10	1.10	1.10	1.10	Withdrawals for period between 57-58 to 60-61 K.G.C. Annexure IV page 233-236. For period 1961-62 to 1968-69 Average withdrawals as given in Annexure IX, page 55-58. Development for 61-62 to 63-64 is assumed.
12.	Khasapur Tank (Including lake losses).	1.30	1.30	1.30	1.30	1.30	The development from year 1954-55 to 1962-63 including losses is assumed and further upto 1968-69 average withdrawal including losses (1.30 T.M.C.) is taken from Annexure IX, page 59-62.
13.	Kurnoor Project (Including lake losses)	-	-	-	0.30	0.60	For 67-68 to 68-69 development is assumed.
14.	Krishna Canals Ex-Khodshi(Including lake losses)	2.92	2.74	2.36	1.53	1.87	For withdrawals between 1951-52 to 1960-61 K.G.C. Annexure IV page 2-3 and for 61-62 to 68-69 MRDK Vol.V, pages 2 to 9.
15.	Koyna Hydro Electric Project (Including lake losses).	57.29	55.30	90.09	92.57	88.85	For years from 61-62 to 68-69 withdrawals & lake losses are taken from MRDK Vol.V, pages 13 to 20.
16.	Radhanagari Project (Including lake losses)	9.08	7.86	6.00	6.11	6.65	For period between 1954-55 to 60-61 K.G.C. Annexure IV page 8-9. Annexure X page 39; (for losses) and for 1961-62 to 68-69, MRDK Vol.V, page 23-30.
	Total	166.63	168.12	195.42	211.43	204.16	

STATEMENT NO.2

Yearwise utilization for Major & Medium Projects in Mysore State as agreed during discussions of Engineers of Maharashtra-Mysore-Andhra Pradesh on 29th & 30th of July'71

Sl. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61
1.	Ghataprabha Stage I & II including Gokak Canals.	2.06	1.82	2.14	3.43	4.31	4.63	4.67	5.68	8.29	7.39
2.	Bhadra Anicut	3.42	3.82	3.54	3.21	3.14	3.44	3.99	3.96	4.99	4.49
3.	Tunga Anicut	-	-	-	-	3.01	3.01	7.19	7.19	7.19	7.19
4.	Ambligola (including losses)	-	-	-	-	-	-	-	-	-	-
5.	Anjanampur Reservoir (including losses)	2.59	2.60	2.61	2.61	2.62	2.63	2.64	2.64	2.65	2.65
6.	Dharma Canal System Dharma Project(including losses from 64-65).	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
7.	Tungabhadra Dam -										
	(a) Right Bank Low Level Canal.	-	-	3.60	3.81	6.16	8.55	11.98	12.40	13.50	13.82
	(b) Right Bank High Level Canal.	-	-	-	-	-	-	-	-	-	-

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Sl. No.	Name of Project	61-62	62-63	63-64	64-65	65-66	66-67	67-68	68-69	Remarks
1.	Ghataprabha State I & II including Gokak Canals.	7.09	8.34	7.86	8.31	8.41	9.71	10.46	17.69	
2.	Bhadra Anicut.	5.49	6.01	6.37	6.73	7.21	6.20	6.71	7.24	
3.	Tunga Anicut	6.15	8.24	8.31	8.36	9.95	11.62	11.11	11.39	
4.	Ambligola (including losses)	-	1.40	1.40	1.40	1.40	1.40	1.40	1.40	
5.	Anjanapur Reservoir (including losses)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
6.	Dharma Canal System Dharma Project (including losses from 64-65)	1.40	1.40	1.40	2.20	2.20	2.20	2.20	2.20	
7.	Tungabhadra Dam									
	(a) Right Bank Low Level Canal	16.75	18.27	16.42	17.16	16.12	16.32	15.63	14.67	
	(b) Right Bank High Level Canal	-	-	-	-	-	-	0.25	1.43	

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Sr. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61
	Vani Vilas Sagar (including lake losses)	6.18	6.01	7.50	6.12	7.75	7.97	8.82	9.55	11.06	10.68
	Rajolibanda Diversion Scheme.	-	-	-	-	-	-	-	0.60	0.60	0.60
10.	Vijayanagar Channels	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71
	Total of Agreed Projects	21.36	21.36	26.50	26.29	34.10	37.34	46.40	49.13	54.89	53.98 93

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Sr.No.	Name of Project	1961-62	1962-63	63-64	64-65	65-66	66-67	67-68	68-69
8.	Vani Vilas Sagar (including Lake Losses)	9.78	9.54	10.72	10.33	8.25	8.01	7.28	5.10
9.	Rajolibanda Diversion Scheme.	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
10.	Vijayanagar Channels.	9.64	9.64	9.64	9.64	9.64	9.64	9.64	9.64
	Total of Agreed Projects	60.00	66.54	65.82	68.33	66.88	68.80	68.38	74.46

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Yearwise gross utilisations of major and medium projects in Mysore according to Mysore in respect of which Maharashtra agrees but Andhra Pradesh has not agreed.

Sl. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61
1.	Tungabhadra Left Bank Canal (including lake losses).	-	-	9.0	9.0	9.0	11.97	13.56	15.48	17.62	29.10
2.	Bhadra Reservoir (including lake Losses)	-	-	-	-	-	-	5.74	5.74	9.06	9.16
	Total of 1 & 2	-	-	9.0	9.0	9.0	11.97	19.30	21.22	26.68	38.26
	Grand Total	21.36	21.36	35.50	35.29	43.10	49.31	65.70	70.35	81.57	92.19

Sr. No.	Name of Project	61-62	62-63	63-64	64-65	65-66	66-67	67-68	68-69	Remarks
1.	Tungabhadra Left Bank Canal (including lake losses).	20.10	14.82	19.53	21.00	25.90	54.70	59.50	59.50	Pro-rata based on 92.30 TMC for 5,80,000 acres plus 9 TMC for evaporation losses.
2.	Bhadra Reservoir (including lake losses)	9.55	11.19	16.63	18.67	73.15	42.37	60.23	68.89	Pro-rata based on 57 TMC for 2,44,663 acres plus 4.7 TMC for evaporation losses.
	Total/1 & 2	29.65	26.01	36.16	39.67	63.05	97.07	119.73	128.39	
	Grand Total	89.65	92.55	101.98	108.00	129.93	165.87	188.11	202.85	

STATEMENT NO.3

Krishna Basin yearwise gross utilisations for Major and Medium Projects in Andhra Pradesh for the period 1951-52 to 1968-69 as discussed and agreed in the meeting of Engineers on 29.7.1971 and 30.7.1971.

S. No.	Name of Project.	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
		(Utilisation in TMcft)												
1.	Muniyeru (1898-99)	2.94	2.28	3.07	3.29	3.75	3.13	3.20	3.58	4.58	3.33	4.39	4.70	4.66
2.	Dindi Project (1943)	3.14	4.08	3.38	4.02	4.71	3.32	3.64	3.39	3.64	3.52	4.10	3.61	3.41
3.	Pakhal lake (1922)	2.53	2.53	2.53	2.53	2.05	2.80	2.56	2.94	3.03	2.64	2.60	2.60	2.60
4.	Palair Project (1926)	4.10	1.72	3.37	4.51	4.56	4.85	4.47	5.19	4.05	2.69	3.99	4.06	3.31
5.	Wyra Project (1930)	4.76	1.36	3.84	4.24	4.41	3.86	3.88	3.73	4.44	2.62	4.08	3.66	4.02

Note:- Krishna Delta utilisation are not given as they are given along with anicut discharges at Vijayawada.

(Continued)

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(Andhra Pradesh continued)

S. No.	Name of Project	64-65	65-66	66-67	67-68	68-69	Remarks
1.	Muniyeru. (1898-99)	3.33	2.68	3.72	3.67	2.48	Utilisations for years 51-52 to 60-61 as per page 50-51 of K.G.C. Annexure IV. Actual withdrawals for 61-62 to 68-69 pages 16 to 19 of APDK-vol.VI (Actual withdrawals).
2.	Dindi Project (1943)	3.90	3.56	3.09	3.20	2.55	Utilisations for years 51-52 to 60-61 as per pages 44-45 of K.G.C. Annexure IV (Actual withdrawals) + Evaporation losses 0.70 TMC. For 61-62 to 68-69 APDK Vol.VI pages 31-34 (actual withdrawals)
3.	Pakhal Lake (1922)	2.60	2.60	2.60	2.60	2.60	1951-52 to 60-61 Actual withdrawals from pages 48-49 of KGC Annexure IV (actual withdrawals). For period 1961-62 to 68-69 agreed utilisation.
4.	Palair Project (1926)	2.19	3.43	1.10	2.79	0.74	For 1951-52 to 60-61 K.G.C. Annexure IV as per page 46-47 + Evaporation losses. For further period vide pages 21 to 24 of APDK Vol.VI
5.	Wyra Project (1930)	2.78	2.86	3.29	3.95	2.56	For 1951-52 to 60-61 K.G.C. Annexure IV pages 52-53 + Evaporation losses 1 TMC. For further period vide pages 26-29 of APDK Vol.VI.

Note:- Krishna Delta utilisation are not given as they are given along with anicut discharges at Vijayawada.

(Continued)

(An dra Pradesh continued)

S. No.	Name of Project.	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
6.	Koilsagar Project (1954)	-	-	-	2.78	2.78	2.78	2.78	2.78	2.78	2.78	3.73	3.82	3.09
7.	Tungabhadra Project-L.L.C. (1953) Right Bank Canal.		-	5.60	5.72	5.65	7.82	8.98	13.55	16.01	21.60	14.61	16.07	15.70
8.	Bhairavanitippa (1958)	-	-	-	-	-	-	-	2.90	2.90	2.90	3.74	4.04	4.73
9.	Musi Project (1957-58)	-	-	-	-	-	-	2.20	2.20	2.20	2.20	1.71	2.94	3.82
10.	Water supply to twin cities.	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
11.	Tungabhadra Project H.L.C. Stage I & II	-	-	-	-	-	-	-	-	-	-	-	-	-
12.	Kotipalli vagu.	-	-	-	-	-	-	-	-	-	-	-	-	-
13.	Vaikuntapuram pumping scheme.	-	-	-	-	-	-	-	-	-	-	-	-	-
14.	Rajolibunda Diversion Scheme. (A.P. share)	-	-	-	-	-	-	-	3.00	3.00	3.00	2.90	4.13	4.53

(Continued)

(Andhra Pradesh continued)

S. No.	Name of Project.	64-65	65-66	66-67	67-68	68-69	Remarks.
6.	Koil sagar Project (1954)	3.26	2.29	3.00	3.58	1.92	For period 1951-52 to 60-61 prorata utilisation of 9800 acres has been worked out with + 0.50 TMC losses. For 61-62 to 68-69 prorata of ayacut given in A.P.D.K. Vol.VII subject to maximum of actual withdrawals.
7.	Tungabhadra Project L.L.C. (1953) Right Bank Canal.	15.09	18.53	21.11	19.71	20.03	Prorata utilisation + 5.5 TMC lake losses. For 61-62 to 68-69 prorata of ayacut given in A.P.D.K. Vol.VII subject to maximum of actual withdrawals.
8.	Bhairavanitippa (1958)	4.75	3.01	4.42	3.45	2.06	For 1951-52 to 60-61 prorata utilisation are worked out with + 0.80 TMC losses. For 61-62 to 68-69 prorata of ayacut given in A.P.D.K. Vol. VII page 29.
9.	Musi Project. (1957-58)	4.38	5.31	2.53	5.59	2.78	1957-58 to 60-61 page 36 of K.G.C.Annexure IX. For 1961-62 to 68-69 prorata based on ayacuts given in A.P.D.K. Vol. VII page 28.
10.	Water supply to twin cities.	3.90	3.90	3.90	3.90	3.90	Agreed utilisations.
11.	Tungabhadra Project H.L.C. Stage I & KI.	-	-	3.78	10.66	15.18	Prorata of 32.5 TMC to ayacut.
12.	Kotipalli vagu.	-	-	-	-	1.00	
13.	Vaikuntapuram (Pumping Scheme)	-	2.60	2.60	2.60	2.60	
14.	Rajolibunda Diversion scheme. (A.P.Share)	5.50	5.61	9.05	9.50	9.56	Prorata worked out $\frac{15.9}{87000}$ x Irrigated area For 61-62 to 68-69 Ayacut given APDK VII P.20.

(Continued)

(Andhra Pradesh continued)

S. No.	Name of Project.	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
15.	K.C. Canal (Actual withdrawals)	33.69	33.43	41.79	29.32	23.92	30.63	38.47	40.56	39.53	60.98	54.56	60.53	66.33
16.	Nagarjunasagar Project													
	(a) Right Bank Canal (including losses)	-	-	-	-	-	-	-	-	-	-	-	-	-
	(b) Left Bank Canal.	-	-	-	-	-	-	-	-	-	-	-	-	-
Total		55.06	49.30	67.48	60.31	55.74	63.09	74.08	87.72	90.06	112.16	104.31	114.06	120.10

(Contd.)

(Andhra Pradesh continued)

S.No.	Name of Project.	64-65	65-66	66-67	67-68	68-69	Remarks.
15.	K.C. Canal (Actual withdrawals)	60.41	67.28	68.45	72.68	83.23	Page 39 of K.G.C. Annexure IV. Page 8-11 of APDK Vol.VI.
16.	Nagarjunasagar Project.						
	(a) Right Bank Canal (including losses)	-	-	8.00	85.11	130.56	Page 9 and 10 of A.P.D.K. Vol.VII.
	(b) Left Canal.	-	-	-	10.82	30.90	Prorata of ayacut of 0.714 thousand acres and 2.06 thousand acres.
Total		112.09	123.68	140.64	243.87	314.65	

Krishna Basin yearwise gross utilizations of Major and Medium Projects in Mysore for the period 1951-52 to 1968-69 according to Andhra Pradesh in respect of which there is no agreement between the States.

S.No.	Name of Project.	1951-1952.	1952-1953.	1953-1954.	1954-1955.	1955-1956.	1956-1957.	1957-1958.	1958-1959.	1959-1960.	1960-1961.	Remarks.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1.	Bhadra Reservoir.	..	..	..	..	..	..	5.74	5.74	7.96	8.16	Based on prorata from the figures given on page 6 MYDK XIII over the proposed ayacut of 2,44,663 and withdrawals of 48.6 TMC. plus evaporation losses of 4.9 TMC., subject to maximum of actual withdrawals.
	Tungabhadra Project Left Bank Low Level Canal..	..	..	9.0	9.0	9.0	10.83	11.82	13.00	14.32	20.52	Based on prorata from the figures given on Page 26 of K.G.C. Annex.IX over the proposed ayacut of 5,80,000 acres and utilisation of 56 TMC. plus 9 TMC. losses subject to maximum of actual withdrawals.

(Contd.)

Mysore Contd..

S.No.	Name of Project.	1961-1962.	1962-1963.	1963-1964.	1964-1965.	1965-1966.	1966-1967.	1967-1968.	1968-1969.	Remarks.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	Bhadra Reservoir..	8.69	10.03	14.50	16.00	33.32	42.37	60.	68.89	On prorata basis from the figures of areas given on page 33 of MYDK Vol.X(i) and adding evaporation losses 4.90 TMC. and 46.60 TMC. for diversion.
2.	Gungabhadra Project Left Bank Low Level Canal..	15.75	12.59	15.38	16.29	19.15	36.73	39.59	39.52	On prorata basis for the figures of areas given on page 28 of MYDK Vol.X(i) and adding evaporation losses of 9 TMC. and 56 TMCFT. for diversion.

The agreed Minor Irrigation particulars in respect of areas irrigated in the Krishna Basin in Maharashtra, Mysore and Andhra Pradesh have been furnished in the accompanying statements for each year for the period 1941-42 to 1966-67. The average duties have been agreed upon between the States. The average gross utilizations have been computed for the periods 1941-42 to 1950-51, to 1950-52 to 1960-61 and 1961-62 to 1966-67 on the basis of the agreed average irrigated areas and the agreed average duties.

The statements of agreed areas and duties and of the computed water requirements therefrom which have been initialled by the Engineers representing the States of Andhra Pradesh, Mysore and Maharashtra will be signed by Counsel and handed in when the Tribunal reassembles on the 26th instant. This agreed document to be signed by Counsel will state that the above agreement is without prejudice to the rights and contentions of the parties on the question whether any minor irrigation is to be regarded as a protected use or not, and parties will be free to make their submission on that question.

Sd/- B.C. Angdi
10.8.71

Sd/- K.K. Framji
10.8.71

Sd/-
M. Sitarama Sastri
10.8.71

Sd/- T. Krishna Rao
for the State of Mysore
26.8.1971

Sd/- H.M. Seervai
for the State of Maharashtra
26.8.1971

Sd/- P. Ramachandra Reddi
for the State of Andhra Pradesh
26.8.1971

ANNEXURE 'B'

MAHARASHTRA

Abstract for the minor irrigation works in Maharashtra (Krishna basin) having utilisation less than 1.0 T.M.C. (excluding area under Lift Irrigation & Bandharas vide foot Note).

(Figures in acres)

Sr. No.	Year	Ahmednagar		Bhir		Osmenabad	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	3.	4.	5.	6.	7.	8.
1.	1941-42	336	24	306	72	26	2
2.	1942-43	320	42	1035	390	2420	1480
3.	1943-44	1258	280	2101	230	4545	1055
4.	1944-45	1135	176	1269	310	2662	1032
5.	1945-46	216	17	1269	310	2662	1032
6.	1946-47	344	30	1269	310	2662	1032
7.	1947-48	841	92	1847	258	682	39
8.	1948-49	307	36	1949	455	400	80
9.	1949-50	760	81	1727	110	404	80
10.	1950-51	2523	295	1373	160	557	-
Total of each District.		8040	1073	14145	2605	17020	5832
Average		804	107	1415	261	1702	583
Duty in acres/ mcft.		10.3	12.5	10.1	12.5	8.1	12.5
Water requirement in Mcft.		78	9	140	21	210	47

Sr. No.	Year	Poona & Bhor		Satara and Phaltan		Sangli, Miraj, Aundh, Jath.	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	9.	10.	11.	12.	13.	14.
1.	1941-42	9815	2460	35226	7600	3496	449
2.	1942-43	13526	3340	39533	9400	2655	450
3.	1943-44	3777	900	41153	9700	1675	135
.	1944-45	4122	950	41756	10700	1618	131
.	1945-46	5000	950	36127	7500	1496	196
.	1946-47	5771	1080	37043	9650	1471	127
.	1947-48	2992	495	36812	11100	1471	127
.	1948-49	11596	1830	41905	11850	1471	127
.	1949-50	7135	1320	33600	8700	4800	1300
10.	1950-51	9658	1980	33900	10600	6506	1680
Total of each District.		73392	15305	377055	96800	26659	4722
Average		7339	1531	37706	9680	2666	472
Duty in acres Mcft.		11.7	12.5	8.0	12.5	8.0	12.5
Water requirement in Mcft.		627	122	4713	774	333	38

Sr. No.	Year	Kolhapur & Chandgadh		Sholapur & Akkalkot		Total	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop.
1.	2.	15.	16.	17.	18.	19.	20.
1.	1941-42	54925	150	299	55	104429	10812
2.	1942-43	21398	151	251	60	81138	15313
3.	1943-44	27640	110	5455	1300	87604	13710
4.	1944-45	28658	210	213	47	81433	13556
5.	1945-46	22293	3589	165	36	69228	13630
6.	1946-47	19266	147	79	20	67905	12396
7.	1947-48	18816	100	90	23	63551	12234
8.	1948-49	19065	139	1919	460	78612	14977
9.	1949-50	21241	851	15773	3600	85440	16042
10.	1950-51	32967	221	298	61	87782	14997
	Total of each District.	266269	5668	24542	5662	807122	137667
	Average	26627	567	2454	566	80712	13767
	Duty in acres mcft.	5.2	12.5	7.5	12.5		(12.5)
	Water requirement in Mcft.	5120	45	327	45	11548	1101
						12649	

Sr. No.	Year	Ahmadnagar 1st crop	Ahmadnagar 2nd crop	Bhir 1st crop	Bhir 2nd crop	Osmanabad 1st crop	Osmanabad 2nd crop
1.	2.	3.	4.	5.	6.	7.	8.
1.	1951-52	2523	295	1268	293	311	-
2.	1952-53	435	66	433	72	215	14
3.	1953-54	651	110	635	190	1086	185
4.	1954-55	1230	230	1297	467	112	13
5.	1955-56	1412	221	1417	452	1353	-
6.	1956-57	1619	215	1164	300	2290	290
7.	1957-58	1341	234	1192	310	79	10
8.	1958-59	2503	386	1543	196	472	33
9.	1959-60	3301	457	1648	202	158	26
10.	1960-61	2593	353	1508	142	79	10
Total of each District.		17608	2567	12105	2624	6155	581
Average		1761	257	1210	262	616	58
Duty Acres/mcft.		10.3	12.5	10.1	12.5	8.1	12.5
Water requirement in Mcft.		171	21	120	21	76	5

Sr. No.	Year	Poona		Satara		Sangli	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	9.	10.	11.	12.	13.	14.
1.	1951-52	9658	1980	31000	9900	6506	1680
2.	1952-53	11595	2400	27200	7600	4600	850
3.	1953-54	18928	3900	36900	10950	3500	690
4.	1954-55	12009	2519	28800	10350	5100	1065
5.	1955-56	10207	1950	34400	10900	5300	1080
6.	1956-57	12487	2400	38700	12150	5100	1300
7.	1957-58	8321	735	34827	11400	4693	970
8.	1958-59	14931	1585	43472	8100	7904	1266
9.	1959-60	117500	1840	47177	15300	7657	1611
10.	1960-61	13708	2050	49894	13900	9386	1250
Total of each District.		123594	21359	372370	110550	59746	11762
Average		12359	2136	37237	11055	5975	1176
Duty Acres/mcft.		11.7	12.5	8.0	12.5	8.0	12.5
Water requirement in Mcft.		1056	171	4655	884	747	94

Sr. No.	Year	Kolhapur & Chandgadh 1st crop	Kolhapur & Chandgadh 2nd crop	Sholapur 1st crop	Sholapur 2nd crop	Total 1st crop	Total 2nd crop
1.	2.	15.	16.	17.	18.	19.	20.
1.	1951-52	32967	221	19542	2820	103775	17189
2.	1952-53	34694	787	1587	255	80759	12044
3.	1953-54	33057	687	2282	510	97039	17222
4.	1954-55	38797	882	2083	440	89428	1596[illegible]
5.	1955-56	38667	997	2678	570	95434	16170
6.	1956-57	40216	1140	2579	544	104155	18339
7.	1957-58	41765	820	3155	730	95373	15209
8.	1958-59	42668	930	4900	1050	118393	13546
9.	1959-60	48312	1860	4900	1100	124903	22396
10.	1960-61	55988	1305	4410	920	137566	19930
Total of each District.		407131	9629	48116	8939	1046825	168011
Average		40713	963	4812	894	104683	16801
Duty Acres/Mcft.		5.2	12.5	7.5	12.5	-	-
Water requirement in Mcft.		7829	77	642	72	15296	1345
							16641

Sr. No.	Year	Ahmednagar		Bhir		Osmanabad	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	3.	4.	5.	6.	7.	8.
1.	1961-62	2682	346	1929	236	79	11
2.	1962-63	1967	266	1543	230	393	52
3.	1963-64	2325	330	1543	238	393	53
4.	1964-65	2325	306	2490	335	393	54
5.	1965-66	2861	367	2595	330	735	100
6.	1966-67	5007	785	4630	660	864	110
Total of each District.		17167	2400	14730	2029	2907	380
average		2871	400	2455	338	484	63
Duty Acres/Mcft.		10.3	12.5	10.1	12.5	8.1	12.5
Water requirement in Mcft.		278	32	243	27	60	5

Sr. No. 1.	Year 2.	Poona 1st crop 9.	Poona 2nd crop 10.	Satara 1st crop 11.	Satara 2nd crop 12.	Sangli 1st crop 13.	Sangli 2nd crop 14.
1.	1961-62	14931	2040	49894	15200	10868	1880
2.	1962-63	13708	1970	49400	15200	13585	2210
3.	1963-64	20071	3580	48650	12750	13585	2380
4.	1964-65	15176	5500	55328	16500	13832	2140
5.	1965-66	17108	5560	57671	16700	15808	2120
6.	1966-67	27170	5060	45201	14500	12844	1330
Total of each District.		108164	23710	306153	90850	80522	12060
Average		18027	3952	51025	15141	13420	2010
Duty Acres/Mcft.		11.7	12.5	8.0	12.5	8.0	12.5
Water requirement in Mcft.		1540	316	6504	1211	1678	161

Sr. No.	Year	Kolhapur 1st crop	Kolhapur 2nd crop	Sholapur 1st crop	Sholapur 2nd crop	Total 1st crop	Total 2nd crop
1.	2.	15.	16.	17.	18.	19.	20.
1.	1961-62	56665	1015	6125	1450	143173	22178
2.	1962-63	50796	144	11026	2600	142418	22672
3.	1963-64	49637	2740	11271	3220	147484	25291
4.	1964-65	60955	1990	10781	2910	161280	29735
5.	1965-66	65695	5020	3920	1330	166443	31527
6.	1966-67	60503	6380	7596	1954	163815	30770
Total of each District		344251	17289	50719	13464	924613	162182
Average		57375	2881	8453	2244	154100	27029
Duty Acres/Mcft.		5.2	12.5	7.5	12.5	-	-
Water requirement in Mcft.		11034	230	1127	180	22464 2162 24626	

Note:- The District-wise areas of minor Irrigation given in the above statement do not include the areas under Lift Irrigation Schemes and Bandharas in Krishna Basin in Maharashtra, the utilisation of which are given as 19.0 T.M.C. vide C.M.P. No.16(46)/71-KWDT, dated 20th April, 1971, filed by Maharashtra.

AREA IRRIGATED AND UTILISATION UNDER MINOR IRRIGATION WORKS IN KRISHNA BASIN IN MYSORE STATE

(1941 - 42 TO 1966 - 67)

-:oOo:-

Statement showing average area irrigated and utilisation under minor irrigation works, district-wise, in Mysore State, in Krishna basin for the decade 41-42 to 50-51.

Sl. No.	Year.	Bijapur		Belgaum		Dharwar	
		I crop	II crop	I crop	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1941-42	720	76	18,783	1,803	55,582	-
2.	1942-43	720	76	22.099	1,825	74,147	259
3.	1943-44	40	7	29,991	1,310	78,914	134
4.	1944-45	538	59	29,759	2,523	80,481	225
5.	1945-46	326	47	16,776	1,191	75,962	4,519
6.	1946-47	1,201	128	17,649	1,765	83,214	75
7.	1947-48	394	45	12,241	1,207	85,268	145
8.	1948-49	616	112	15,238	1,676	89,875	63
9.	1949-50	806	57	47,470	4,035	78,404	-
10.	1950-51	11,174	2,369	23,692	2,665	85,025	110
Total of each Dist.		16,535	2,976	233,698	20,000	786,872	5,530
Average (Acres)		1,654	298	23,370	2,000	78,687	553
Duty (Acres/ Mcft)		11.8	8.85	11.31	8.50	13.87	10.4
Water requirement in TMC.		0.140	0.034	2.066	0.235	5,673	0.053

Statement showing average area irrigated and utilisation under Minor Irrigation, district-wise, in Mysore, in Krishna basin, for the decade 1941-42 to 1950-51.

Sl. No.	Year	Bellary		Bidar		Chikkamagalur.	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	4	6	7	8
1.	1941-42	15,110	3,020	631	299	105,200	-
2.	1942-43	14,390	279	835	343	105,800	-
3.	1943-44	19,910	407	715	350	105,800	-
4.	1944-45	8,700	501	824	350	93,400	-
5.	1945-46	15,750	2,230	824	354	93,750	-
6.	1946-47	16,429	3,690	824	350	94,600	-
7.	1947-48	9,360	440	396	156	103,700	-
8.	1948-49	10,795	191	690	137	111,013	-
9.	1949-50	17,605	77	593	12	108,233	-
10.	1950-51	13,819		536	265	83,598	480
Total of each Dist.		141,868	10,001	6,918	2,616	1,005,094	480
Average (Acres).		14,187	1,090	692	262	100,509	48
Duty (Acres/Mcft)		3.42	2.60	6.82	5.10	5.33	4.00
Water requirement in TMC.		4.148	0.419	0.102	0.051	18.880	0.012

Sl. No.	Year.	Chitradurga		Gulbarga		Hassan.	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	5	6	7	8
1.	1941-42	41,377	-	29,603	26,800	20,742	-
2.	1942-43	39,992	-	23,750	19,100	21,058	-
3.	1943-44	48,777	-	20,550	10,275	21,288	-
4.	1944-45	45,607	-	26,590	8,560	21,447	-
5.	1945-46	33,742	-	26,590	8,560	21,448	-
6.	1946-47	43,229	229	26,590	8,560	21,448	-
7.	1947-48	70,797	-	17,085	1,325	21,448	-
8.	1948-49	83,780	-	19,350	255	15,838	-
9.	1949-50	39,652	-	18,100	7,860	14,328	-
10.	1950-51	36,290	-	14,400	6	15,155	-
Total of each Dist:		483,243	229	222,608	91,301	194,200	-
Average (Acres)		48.324	23	22,261	9,130	1,942	-
Duty (Acres/Mcft)		3,36	2.52	3.42	2.60	3.18	-
Water requirement in TMC.		14.382	0.010	6.510	3.511	6.106	-

Sl. No.	Year	Kanara I crop	Kanara II crop	Raichur I crop	Raichur II Crop	Shimoga I Crop	Shimoga II crop
1	2	3	4	4	6	7	8
1.	1941-42	1,032	60	16,800	15,200	163.885	-
2.	1942-43	973	-	17,850	12,138	155,644	-
3.	1943-44	953	-	17,300	2,650	157,453	-
4.	1944-45	941	-	14,220	5,940	169,648	-
5.	1945-46	973	-	14,220	5,940	165,511	-
6.	1946-47	953	-	14,220	5,940	164,248	-
7.	1947-48	941	-	5,890	2,380	160,323	-
8.	1948-49	1,420	-	4,400	202	159.260	-
9.	1949-50	1,543	-	9,500	2,620	113,105	-
10.	1950-51	2,530	1	4,200	-	116,181	-
	Total of each Dist.	12,259	61	118,605	53,010	1,525,258	
	Average (Acres)	1,226	6	11,860	5,301	152,526	-
	Duty (Acres/Mcft)	4.88	3.66	3.33	2.55	7.81	-
	Water requirement in TMC.	0.251	0.002	3.561	2.079	19.529	-

Sl. No.	Year	Tumkur		Total for the State	
		I crop	II crop	I crop	II crop
1	2	3	4	5	6
1.	1941-42	40,949	110	510,414	47,368
2.	1942-43	34,065	-	511,373	34,020
3.	1943-44	38,466	2,231	540,157	17,364
4.	1944-45	34,659	-	526,805	18,158
5.	1945-46	27,050	-	492,922	22,841
6.	1946-47	33,420	-	518,025	20,737
7.	1947-48	36,405	-	524,248	5,698
8	1948-49	34,156	-	546,431	2,636
9.	1949-50	33,101	-	482,440	14,661
10.	1950-51	26,851	-	433,451	5,962
Total of each District.		339,121	2,341	5,086,266	189,445
Average (Acres)		33,912	234	508,627	18,944
Duty (Acres/Mcft)		5.37	4.00	-	-
Water requirement in CMC.		6.315	0.058	87.663	6.464

GRAND TOTAL 94.127 TMC

Statement showing everage area irrigated and utilisation under Minor Irrigation Works, district-wise, in Mysore State in Krishna basin for the decade 1951-52 to 1960-61

Sl. No.	Year	Bijapur		Belgaum		Dharwar	
		I crop	II crop	I crop.	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1951-52	11,171	2,369	23,692	2,665	85,025	110
2.	1952-53	1,895	154	20,462	1,895	87,597	227
3.	1953-54	1,573	368	24,622	1,925	92,187	332
4.	1954-55	1,395	243	26,096	1,957	93,388	252
5.	1955-56	1,651	189	26,739	1,283	97,758	215
6.	1956-57	1,671	152	27,400	1,915	99,000	624
7.	1957-58	2,590	176	30,112	1,584	103,189	206
8.	1958-59	7,092	50	26,849	830	100,957	60
9.	1959-60	4,485	368	28,506	9,806	109,485	197
10.	1960-61	5,600	1,030	25,650	1,280	106,200	6,100
	Total of each Dist.	39,132	5,108	260,128	25,140	974,686	8,323
	Average (Acres)	3,913	511	26,013	2,514	97,469	832
	Duty (Acres/Mcft)	11.8	8.85	11.31	8.50	13.87	10.4
	Water re-requirement in TMC.	0.332	0.057	2,300	0.295	7.027	0.080

Sl. No.	Year	Bellary		Bedar		Chikkamagalur.	
		I crop	II crop	I crop	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1951-52	12,323	2,736	677	33	83,598	486
2.	1952-53	13,749	19,936	669	58	95,243	-
3.	1953-54	13,189	-	641	185	104,250	-
4.	1954-55	11,466	-	561	103	107,751	-
5.	1955-56	16,214	-	711	107	126,556	-
6.	1956-57	17,181	-	64	1	112,200	45
7.	1957-58	15,291	1,177	172	26	112,600	3,490
8.	1958-59	16,109	725	80	14	96,745	6,172
9.	1959-60	17,075	135	388	61	97,696	35,366
10.	1960-61	19,000	-	394	68	80,400	4,832
Total of each Dist.		151,597	24,709	4,357	656	1,017,039	50,390
Average (Acres)		15,160	2,471	436	66	101,704	5,039
Duty (Acres/Mcft)		3.42	2.60	6.82	5.1	5.33	4.00
Water requirement in TMC.		4.432	0.950	0.064	0.013	19.081	1.259

Sl. No.	Year	Chitradurga		Gulbarga		Hassan.	
		I crop	II crop	I crop	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1951-52	36,290	-	34,600		15,151	-
2.	1952-53	34,600	944	11,700	366	15,515	-
3.	1953-54	42,719	-	34,400	1,495	14,350	-
4.	1954-55	41,348	-	42,300	2,005	15,410	-
5.	1955-56	45,015	-	41,000	735	15,410	-
6.	1956-57	45,782	-	13,654	3	15,650	11
7.	1957-58	45,842	2,796	15,558	37	15,793	663
8.	1958-59	40,598	4,304	15,683	92	17,430	8,366
9.	1959-60	37,105	5,269	18,340	-	12,983	10,192
10.	1960-61	35,000	3,750	16,600	-	13,100	9,650
	Total of each Dist.	404,200	17,063	243,835	4,733	150,792	28,882
	Average (Acres)	40,430	1,706	24,384	473	15,079	2,888
	Duty (Acres/Mcft)	3.36	2.52	3.42	2.60	3.18	2.38
	Water requirement in TMC.	12.033	0.677	7.130	0.182	4.742	1.213

Sl. No.	Year	Kanara		Raichur		Shimoga	
		I crop	II crop	I crop	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1951-52	2,530	1	9,550	-	116,181	-
2.	1952-53	3,220	-	5,000	-	122,774	-
3.	1953-54	3,226	-	6,740	-	122,774	40,515
4.	1954-55	2,946	-	17,150	-	122,773	-
5.	1955-56	3,180	-	22,200	-	120.737	-
6.	1956-57	2,730	95	15,882	-	160,000	-
7.	1957-58	3,554	163	17,165	-	159,802	3,004
8.	1958-59	3,026	411	11,706	-	166,280	-
9.	1959-60	2,741	32	15,530	14	189,498	-
10.	1960-61	2,846	22	15,800	38	185,200	-
Total of each Dist.		30,249	724	136,723	52	1,466,019	43,519
Average (Acres)		3,025	72	13,672	5	146,602	4,352
Duty (Acres/Mcft)		4.88	3.66	3.33	2.55	7.81	5.85
Water requirement in Mcft.		0.620	0.020	3.569	0.002	18.771	0.744

Sl. No.	Year	Tumkur		Total	
		I Crop	II Crop	I Crop	I Crop
1	2	3	4		
1.	1951-52	26,851	-	457,642	8,399
2.	1952-53	26,494	-	438,918	23,580
3.	1953-54	27,226	-	487,897	44,820
4.	1954-55	29,140	-	511,624	4,560
5.	1955-56	29,144	-	546,291	2,529
6.	1956-57	32,750	-	544,214	2,846
7.	1957-58	32,789	1,082	554,457	14,404
8.	1958-59	38,278	21,474	540,833	42,507
9.	1959-60	39,916	4,989	573,748	66,429
10.	1960-61	26,450	6,450	532,240	33,220
Total of each Dist.		309,008	33,995	5,187,864	243,294
Average (Acres)		30,901	3,400	518,786	24,329
Duty (Acres/Mcft)		5.37	4.00		
Water requirement in TMC.		5.755	0.850	85.856	6.342

Grand Total: 92,198 TMC.

Statement showing average area irrigated and utilisation under Minor Irrigation works, district-wise, in Mysore in Krishna basin for the decade 1961-62 to 1966-67

Sl. No.	Area	Bijapur		Belgaum		Dharwar	
		I crop	II crop	I crop	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1961-62	3,836	470	27,365	76	107,381	4,080
2.	1962-63	3,998	299	26,078	824	102,534	6,531
3.	1963-64	5,472	511	25,200	428	110,950	1,489
4.	1964-65	6,717	1,240	24,442	-	110,000	-
5.	1965-66	6,670	285	25,100	90	118,222	981
6.	1966-67	7,954	N.A.	21,819	N.A.	106,222	N.A.
	Total of Each Dist.	34,647	2,805	150,004	1,418	655,309	13,081
	Average (acres)	5,775	561	25,001	283	109,218	2,616
	Duty (Acres/Mcft)	11.8	8.85	11.3	8.50	13.87	10.4
	Water requirement in Mcft.	0.489	0.063	2.212	0.033	7.874	0.252

Sl. No.	Year	Bellary I crop	Bellary II crop	Bidar I crop	Bidar II crop	Chikkamagalur I crop	Chikkamagalur II crop
1	2	3	4	5	6	7	8
1.	1961-62	23,408	-	383	66	111,430	3,164
2.	1962-63	23,916	4,161	383	28	104,318	-
3.	1963-64	21,102	-	448	45	71,225	-
4.	1964-65	16,286	-	940	117	78,000	-
5.	1965-66	16,943	120	925	240	78,862	252
6.	1966-67	16,252	N.A.	,308	N.A.	83,747	N.A.
Total of each Dist.		117,907	4,281	4,387	496	527,582	3,416
Average (Acres)		19,651	856	731	99	87,930	686
Duty (Acres/Mcft)		3.42	2.65	6.82	5.1	5.33	4.00
Water requirement in TMC.		5.745	0.329	0.107	0.020	16.497	0.171

Sl. No.	Year	Chitradurga		Gulbarga		Hassan	
		I crop	II crop	I crop	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1961-62	49,116	5,745	16,736	-	18,791	11,556
2.	1962-63	48,656	1,095	16,923	-	22,470	2,422
3.	1963-64	40,948	855	9,335	-	23,995	-
4.	1964-65	40,855	1,740	9,524	-	23,200	566
5.	1965-66	19,745	7,147	17,741	1,103	22,262	463
6.	1966-67	31,756	N.A.	17,962	N.A.	19,919	N.A.
	Total of each Dist.	231,076	16,582	88,221	1,103	130,637	15,007
	Average (Acres)	38,513	3,316	14,703	221	21,773	3,001
	Duty (Acres/Mcft)	3.36	2.52	3.42	2.60	3.14	2.38
	Water requirement in TMC.	11.462	1.316	4.299	0.085	6.934	1.261

Sl. No.	Year	Kanara		Raichur		Shimoga	
		I crop	II crop	I crop	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1961-62	2,816	64	15,915	-	185,970	-
2.	1962-63	2,775	2	15,834	-	187,382	2,061
3.	1963-64	2,618	32	15,980	-	187,250	2,458
4.	1964-65	2,540	35	16,188	-	180,100	4,000
5.	1965-66	2,615	22	15,780	169	181,920	3,383
6.	1966-67	2,314	N.A.	17,052	N.A.	170,567	N.A.
	Total of each Dist.	15,678	155	96,739	169	1,093,189	11,902
	Average (Acres)	2,613	31	16,123	34	182,198	2,380
	Duty (Acres/Mcft)	4.88	3.16	3.33	5.0	7.81	5.85
	Water requirement in TMC.	0.535	0.010	4.842	0.007	23,328	0.301

Sl. No.	Year	Tumkur		Total for the State	
		I crop	II crop	I crop	II crop
1	2	3	4	5	6
1.	1961-62	36,970	5,360	600,117	30,581
2.	1962-63	40,232	4,827	595,499	22,250
3.	1963-64	42,460	5,010	556,983	10,828
4.	1964-65	40,500	5,520	549,242	13,218
5.	1965-66	24,966	6,391	531,751	20,646
6.	1966-67	30,062	N.A.	526,924	-
	Total of each Dist	215,190	27,108	3,360,516	97,523
	Average (acres)	35,865	5,422	560,086	19,505
	Duty (Acres/Mcft)	5.37	4.00		
	Water requirement in T.M.C.	6.678	1.355	91.002	5.303

Grand Total:96.305 TMC

STATEMENTS SHOWING THE YEAR-WISE IRRIGATED AREAS AND UTILISATIONS IN KRISHNA BASIN IN ANDHRA PRADESH FOR M.I. SCHEMES TANKS AND DIVERSIONS FROM 1941-42 TO 1966-67

GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1941-42 TO 1950-51

Sl. No.	Year	Anantapur		Guntur		Hyderabad		Khammam		Krishna	
		I Crop	II Crop.	I Crop.	II Crop	I crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.
1	2	3	4	5	6	7	8	9	10	11	12
1.	1941-42	15197	5941	9104	2	63014	40497	..	..	28427	708
2.	1942-43	13721	3226	9393	..	38978	14109	..	..	33380	417
3.	1943-44	21577	4290	10084	19	45955	3866	..	..	33541	14
4.	1944-45	19637	4051	6445	11	42200	14732	..	..	31700	94
5.	1945-46	17868	2150	12193	399	42198	14733	..	..	39223	326
6.	1946-47	21224	5013	9141	20	33034	6719	..	..	42530	13
7.	1947-48	20504	2024	10932	..	38691	4506	..	..	32759	..
8.	1948-49	22066	4378	11010	..	34193	23	..	..	24650	2
9.	1949-50	18603	3616	12490	..	31885	2829	..	..	38240	1912
10.	1950-51	27240	6054	11650	..	21300	1307	..	..	21160	84
Total of each District.		197637	40743	102442	451	394448	108321	..	..	325610	3570
Average of each District.		19764	4074	10244	45	39444	10832	..	..	32561	357
Duty in Acres per M.Cft.		5	$3\frac{1}{3}$	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	..	..	$6\frac{2}{3}$	4
Water requirement in TMC.		3.953	1.222	1.537	0.011	5.917	2.708	..	..	4.884	0.094

GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1941-42 TO 1950-51.

Sl. No.	Year	Kurnool I Crop	Kurnool II Crop	Mahaboobnagar I Crop	Mahaboobnagar II Crop	Medak I Crop	Medak II Crop	Nalgonda I Crop	Nalgonda II Crop	Warangal I Crop	Warangal II Crop	Grand total I Crop	Grand total II Crop
1	2	13	14	15	16	17	18	19	20	21	22	23	24
1.	1941-42	15886	3229	111832	19441	17260	4916	99543	24089	55904	11237	416167	110060
2.	1942-43	17718	2576	90990	24623	17212	5232	116317	25357	55904	11122	393613	86662
3.	1943-44	20568	2205	74575	32435	19197	5912	112360	23820	76486	5595	414313	83156
4.	1944-45	17771	2852	70065	36217	15930	3219	102483	17320	75209	4286	381440	82782
5.	1945-46	18811	1774	70065	36217	15930	3219	102483	17320	75209	4286	393980	80424
6.	1946-47	24026	4042	70065	36217	15930	3219	102483	17320	75209	4286	393642	76849
7.	1947-48	23701	3155	65348	33517	18123	2392	87531	17069	80247	2367	377836	65303
8.	1948-49	19791	2522	49320	24231	17296	1507	84942	9340	54150	6764	317418	48767
9.	1949-50	17771	3998	59805	4538	23560	659	96268	--	76560	4748	378182	22300
10.	1950-51	20320	2086	51205	1040	19736	2368	121530	--	80040	7196	374181	20135
Total of each District.		196363	28439	713270	248476	180175	32643	1025940	151635	704918	61887	3840772	676165
Average of each District		19636	2844	71327	24847	18017	3264	102594	15164	70492	6189	384079	67616
Duty in Acre per MCft.		5	$3\frac{1}{3}$	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4		
Water requirement in TMC.		3.927	0.853	10.749	6.212	2.702	0.816	15.389	3.791	10.574	1.547	59.632	17.254

GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1951-52 to 1960-61

Sl. No.	Year	Anantapur		Guntur		Hyderabad		Khammam.		Krishna	
		I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.
1	2	3	4	5	6	7	8	9	10	11	12
1.	1951-52	19697	5321	12900	38	24845	174	..	..	48150	6306
2.	1952-53	19342	7672	10090	242	10680	277	..	..	22940	46
3.	1953-54	23780	14540	11880	249	22988	293	41971	197	43640	1370
4.	1954-55	18900	8448	11140	229	29462	128	40420	485	45470	2183
5.	1955-56	23710	11030	19660	519	32246	4559	39940	..	52140	4645
6.	1956-57	27830	8266	10590	162	75680	341	42530	..	56350	3942
7.	1957-58	19881	5368	18705	8037	54619	..	54946	..	59172	5621
8.	1958-59	21510	8561	13240	358	49730	6666	58600	..	61420	3704
9.	1959-60	23540	7907	10290	1353	55810	17130	62470	212	71990	9683
10.	1960-61	22840	7060	12180	579	50710	5110	56740	142	76500	11360
Total of each District		221030	84173	130675	11766	406770	34679	397617	1036	537772	48860
Average of each District.		22103	8417	13068	1176	40677	3468	49702	129	53777	4886
Duty in acres per MCFT.		5	$3\frac{1}{3}$	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4
Water requirement in TMCFT.		4.421	2.525	1.960	0.294	4.101	0.867	7.455	0.032	8.066	1.221

GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1951-52 to 1960-61

S. No.	Year	Kurnool		Mahboobnagar		Medak		Nalgonda		Warangal		Grand Total	
		I Crop	II Crop	I Crop	II Crop	I Crop	II Crop	I Crop	II Crop	I Crop	II Crop	I Crop	II Crop
1	2	13	14	15	16	17	18	19	20	21	22	23	24
1.	1951-52	24671	2417	108015	..	26987	1485	124100	..	98107	171	487472	15912
2.	1952-53	27224	3460	93014	4717	20900	234	59034	1842	59387	959	322611	19449
3.	1953-54	23730	8021	129945	9705	31644	2500	110190	25344	111000	8769	550768	70988
4.	1954-55	28280	3648	145779	6013	26640	3196	99304	31570	96850	8612	542245	64512
5.	1955-56	38190	560	175233	17730	22790	4690	115199	50810	96470	16540	615578	111083
6.	1956-57	25680	2552	192062	31850	28360	5794	151953	56190	116300	19800	727335	128897
7.	1957-58	28032	2467	161660	20692	25668	2566	124354	44950	97583	13759	644620	103460
8.	1958-59	29820	6621	177368	22530	26640	5489	135017	65880	113600	26590	686945	146399
9.	1959-60	33420	2985	198949	26250	29020	5225	138950	53930	117500	23390	741939	148065
10.	1960-61	32290	4827	141980	11790	22810	1079	98339	48480	91580	8974	605969	99401
Total of each District.		291337	37558	1524005	151277	261459	32258	1156440	378996	998377	127564	5925482	908176
Average of each Dist.		29134	3756	152400	15128	26146	3226	115644	37900	99838	12756	602489	90842
Duty in acres per Mcft.		5	$3\frac{1}{3}$	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4		
Water requirement in TMcft.		5.827	1.127	22.860	3.782	3.922	0.806	17.347	9.475	14.997	3.189	92.956	23.318

GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1961-62 TO 1966-67

Sl. No.	Year	Anantapur		Guntur		Hyderabad		Khammam		Krishna	
		I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop	I Crop.	II Crop.	I Crop.	II Crop
1	2	3	4	5	6	7	8	9	10	11	12
1.	1961-62	22739	4059	12100	7986	60810	4037	59750	1504	52081	10258
2.	1962-63	32803	7727	10003	1481	77347	5842	56100	2628	64185	14906
3.	1963-64	29803	7391	11534	1908	72939	10868	49623	2630	62662	7268
4.	1964-65	32512	8707	39725	3374	67630	11480	60851	2792	55186	15443
5.	1965-66	19600	2047	15040	1529	57770	12190	63420	1966	52930	7482
6.	1966-67	21860	4328	23050	4494	42060	10580	60630	1504	56770	15190
Total of each District		159217	34259	11452	20772	378556	54997	350674	13024	343814	70547
Average of each District.		26536	5710	18575	3462	63093	9166	58446	2171	57302	11758
Duty in Acres per MCFT.		5	$3\frac{1}{3}$	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4
Water requirement in TMC.		5.307	1.713	2.786	0.865	9.464	2.191	8.767	0.542	8.595	2.939

GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1961-62 to 1966-67.

S.No.	Year	Kurnool		Mahaboobnagar		Medak		Nalgonda		Warangal		Grand Total	
		I Crop	II Crop	I Crop	II Crop	I Crop	II Crop	I Crop	II Crop	I Crop	II Crop	I Crop	II Crop
1	2	13	14	15	16	17	18	19	20	21	22	23	24
1.	1961-62	35814	7378	232486	20403	31202	3286	235278	39068	117255	25796	8[illegible]515	123775
2.	1962-63	33576	6999	203598	27851	29969	3403	236185	9750	114542	20514	858608	101101
3.	1963-64	36720	16524	202373	32582	28370	4653	198450	11709	106863	12717	799337	108250
4.	1964-65	38293	19000	208547	33465	27609	4135	139734	66339	108370	26506	778457	191241
5.	1965-66	37840	15130	170200	23830	24790	3546	133200	42630	116000	13320	690690	123670
6.	1966-67	38740	21740	140100	24080	25510	3061	111800	45055	124500	22660	645020	152692
Total of each District.		220983	86771	1157304	162851	167450	22084	1054647	214551	687530	121513	4631627	800729
Average of Each Dist.		36831	14462	192884	27035	27908	3681	175775	35758	114588	20252	771938	133455
Duty in Acres per MCft.		5	$3\frac{1}{3}$	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4		
Water Requirement in TMC		7.366	4.338	28.933	6.759	4.186	0.920	26.266	8.939	17.188	5.063	118.858	34.269

KRISHNA: 27th August, 1971

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

IN THE MATTER OF A WATER DISPUTE AND CONNECTED MATTERS REGARDING THE INTER-STATE RIVER KRISHNA AND THE RIVER VALLEY THEREOF -

.....

O R D E R

1. All the States through their respective Counsel have entered into a supplementary agreement regarding minor irrigation. (Annexure A). The document is received in evidence and is directed to be marked as Exhibit without any objection.

2. Annexures 'A', 'B', and 'C' to the Order dated 7th May, 1971, are received in evidence and are directed to be marked as Exhibit without any objection.

Sd/-
(R.S. Bachawat)
Chairman

Sd/-
(Shamsher Bahadur)
Member

Sd/-
(D.M. Bhandari)
Member

NEW DELHI:

Dated: 27th August, 1971.

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ANNEXURE 'A'

SUPPLEMENTARY AGREEMENT REGARDING MINOR IRRIGATION

Basis of Computation of Minor Irrigation

Area under minor irrigation has been taken for the first crop as the total of the areas irrigated shown in the Agricultural Statistics, Statistical Abstracts, or Season and Crop Reports under the heads "Private Canals", "Tanks" and "Other Sources".

The Second crop area has been derived thus:-

$$\text{Area of second crop in the District.} = \text{'Area irrigated more than once' (as shown in the Agricultural Statistics)} \times \frac{\text{Area irrigated under first crop as calculated above}}{\text{total area under 1st crop from all sources in the District.}}$$

2. Irrigation from wells has been excluded in the figures of minor irrigation statistics for all States.

3. It is agreed that the minor irrigation before 1940-41 will be assumed to be the same as the average of the next decade 1941-51.

4. The minor irrigation in the 12 Sub-basins may be worked out from the percentages of the several districts attributable to each sub-basin given in Annexure VIII pages 144-145 of the Krishna Godavari Commission Report.

5. The statistics of the irrigation under the Bandharas and the lift irrigation for Maharashtra with a water requirement of 19 T.M.C. are in respect of relatively recent schemes which have come into existence since 1967 and are, therefore, not included in the minor irrigation statistics furnished upto 1967 except for a utilisation of about 2 T.M.C. The balance requirement of 17 T.M.C. would have to be accounted for separately, vide CMP No. 16(46)/71-KWDT.

2...

III

Mysore State have expressed that it is not clear whether the minor irrigation particulars cover some 10 works with an aggregate utilisation of about 4.4 T.M.C., which are not included in the major and medium works. All States will, therefore, re-verify, if there are any works not included either under minor irrigation (as described in (1) above) or under the major and medium projects particulars separately furnished.

6. The following works are excluded from the irrigation computed for minor projects:

Andhra Pradesh	Mysore	Maharashtra
Lankasagar	Hagaribammanhali.	Visapur
Gajuladinna		Mhaswad
		Ashti Tank
		Mangi Tank.
		Ekruk Tank
		(Including Sholapur City)
		Khasapur
		Kurnoor.

7. Subject to the verification mentioned in Para 5, the States are agreed that all upstream utilisations are fully covered either under major and medium projects or under minor works as herein clarified.

Sd/-
T. Krishna Rao
for the State of Mysore
27.8.1971.

Sd/- H.M. Seervai
for the State of Maharashtra
27.8.1971.

Sd/-
P. Ramachandra Reddi,
for the State of Andhra Pradesh
27.8.71

.....

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

IN THE MATTER OF A WATER DISPUTE AND CONNECTED MATTERS REGARDING THE INTER-STATE RIVER KRISHNA AND THE RIVER VALLEY THEREOF -

---

O R D E R

1. CMP No. 16(74)/71-KWDT.

(Further documents filed by the State of Maharashtra on 26.8.1971 in pursuance of Tribunal's Order dated 30.7.1971).

2. CMP No. 16(75)/71-KWDT.

(Further documents filed by the State of Andhra Pradesh on 27.8.1971 in respect of Krishna Barrage Schemes).

Deferred till tomorrow.

3. All the States through their respective Counsel have entered into a second supplementary agreement on minor irrigation. (Annexure A). The document is received in evidence and is directed to be marked as Exhibit without any objection.

Sd/-
(R.S. Bachawat)
Chairman

Sd/-
(Shamsher Bahadur)
Member

Sd/-
(D.M. Bhandari)
Member

NEW DELHI:

Dated: August 30, 1971.

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ANNEXURE 'A'

SECOND SUPPLEMENTARY AGREEMENT ON MINOR IRRIGATION

After verification, the State of Mysore has stated that of the ten works (mentioned in Para 5 of the previous Agreement) one work namely Kolchi weir)(in operation since 1958-1959) is included under "Government Canals" and, therefore, not included in the Statistics of Minor Works; it has also not been included under Major and Medium Schemes. Its sanctioned utilisation is 0.53 T.M.C. Four other works, namely, Kalaskop, Areshankar, Ramanhalli and Nagthan have already been included under the Minor Irrigation Statistics. The remaining five works, viz., Jambadhalla, Hathikoni, Khanakanals, Harinala and Chitwadgi are under construction and, therefore, would not affect the statistics furnished of Minor, Major and Medium Schemes.

The States of Maharashtra and Andhra Pradesh have no changes to make in the agreed utilisations under Minor Works or Major and Medium Schemes.

Sd/-
P. Ramachandra Reddi,
for the State of
Andhra Pradesh
30.8.1971.

Sd/-
H.M. Seervai
for the State of Maharashtra
30.8.1971.

Sd/-
T. Krishna Rao
for the State of Mysore
30.8.1971.

.....

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL

IN THE MATTER OF A WATER DISPUTE AND CONNECTED MATTERS REGARDING THE INTER-STATE RIVER KRISHNA AND THE RIVER VALLEY THEREOF -

-.-.-.-.-.-.-

O R D E R

CMP No. 16(74)/71-KWDT.

(Further documents filed by the State of Maharashtra on 26.8.1971 in pursuance of Tribunal's Order dated 30.7.1971).

By consent, the following portions of the documents have been struck out:-

(1) In certificate serial No. 1, beginning with the words "Cost of generation .... upto 1.11" ;

(2) In certificate serial No. 6, beginning with the words "Revised cost of transmission of power ..... upto 0.50".

The documents except the portions scored out as mentioned above, are received in evidence and are directed to be marked as Exhibit without any objection.

2. CMP No. 19(75)/71-KWDT.

(Further documents filed by the State of Andhra Pradesh on 27.8.1971 in respect of Krishna Barrage Schemes).

By consent, the following portions of the documents are scored out:-

(1) Column (4) and all the contents thereof at pages 5 to 13 ;

(2) Column (5) and all the contents thereof at pages 14 to 18 ;

(3) Column (4) and all the contents thereof at pages 19 to 21.

....2/..

The documents at pages 4 to 23 except the portions scored out as mentioned above, are received in evidence and are directed to be marked as Exhibit without any objection.

With respect to the documents at pages 24 to 39, the parties have entered into an agreement (Annexure X). There will be an order in terms of the agreement.

3. The parties have entered into a third supplementary agreement on minor irrigation (Annexure Y). The documents are received in evidence and are directed to be marked as Exhibit without any objection.

Be it recorded that some of the documents admitted in evidence today and directed to be marked as exhibits are originals and some of them are copies. With regard to copies, production and proof of the originals are dispensed with, by consent.

Sd/-
(R.S. Bachawat)
Chairman

Sd/-
(Shamsher Bahadur)
Member

Sd/-
(D.M. Bhandari)
Member

NEW DELHI:
Dated, September 1, 1971.

.....

ANNEXURE 'X'

Maharashtra and Mysore have no objection to the documents in CMP - (75)/71 (Annexure X from pages 4 to 39 being admitted in evidence in so far as they are estimates of expenditure on proposed schemes. In admitting the said documents in evidence, the States of Maharashtra and Mysore do not admit that the schemes have, in fact, irrigated the areas proposed to be irrigated under them. The said documents are also admitted without prejudice to the rights and contentions of all the parties as to protected users or claim for extra allocation of water independently of protected users.

Sd/-

H.M. Seervai
for the State of Maharashtra.
1.9.71.

Sd/-
P. Ramachandra Reddi,
for the State of Andhra Pradesh.
1.9.71

Sd/-
T. Krishna Rao
for the State of Mysore.
1.9.71

.....

ANNEXURE "Y"

THIRD SUPPLEMENTARY AGREEMENT ON MINOR IRRIGATION

Percentage of the portion of the districts lying in Krishna Basin, in various sub-basins in respect of Minor Irrigation Works in Krishna basin in Maharashtra.

Sr. No.	District	Percentage of portion of district lying in sub-basin					Total
		K1 Sub basin	K2 Sub-basin	K3 Sub basin	K5 Sub basin	K6 Sub-basin	
1.	Ahmednagar	Nil	Nil	Nil	100%	Nil	100%
2.	Bhir	Nil	Nil	Nil	100%	Nil	100%
3.	Osmanabad	Nil	Nil	Nil	54%	46%	100%
4.	Poona	Nil	Nil	Nil	100%	Nil	100%
5.	Satara	70%	Nil	Nil	30%	Nil	100%
6.	Sangli	45%	15%	Nil	40%	Nil	100%
7.	Kolhapur	87%	Nil	13%	Nil	Nil	100%
8.	Sholapur	Nil	Nil	Nil	90%	10%	100%

Statement showing the average area irrigated and utilization under minor irrigation works - sub-basin-wise in Krishna basin in Maharashtra State.

For decade 1941-42 to 1950-51.

Sr. No.	Sub-basin	Area irrigated in Acres			Utilization in Mcft.		
		1st crop	2nd crop	Total	1st crop	2nd crop	Total
1.	K-1	50759	7481	58240	7903	598	8501
2.	K-2	400	71	471	50	6	56
3.	K-3	3462	74	3536	666	6	672
4.	K-5	25064	5816	30880	2799	465	3264
5.	K-6	1028	325	1353	130	26	156
	Total:	80712	13767	94479	11548	1101	12649

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Statement showing the average area irrigated and utilization under minor irrigation works - sub basin wise in Krishna basin in Maharashtra State.

For decade 1951-52 to 1960-61.

Sr. No.	Sub basin	Area irrigated in Acres.			Utilization in Mcft.		
		1st crop	2nd crop	Total	1st crop	2nd crop.	Total
1.	K-1	64175	9106	73281	10406	728	11134
2.	K-2	896	177	1073	112	14	126
3.	K-3	5293	125	5418	1018	10	1028
4.	K-5	33555	7277	40832	3661	84	4245
5.	K-6	764	116	880	99	9	108
	Total	104683	16801	121484	15296	1345	16641

-: 3

Statement showing the average area irrigated and utilization under minor irrigation works - sub-basin wise in Krishna basin in Maharashtra State.

For decade 1961-62 to 1966-67.

Sr. No.	Sub-basin.	Area irrigated in Acres			Utilization in Mcft.		
		1st crop	2nd crop	Total	1st crop	2nd crop	Total
1.	K-1	91673	14009	105682	14908	1120	16028
2.	K-2	2013	302	2315	252	25	277
3.	K-3	7459	375	7834	1434	30	1464
4.	K-5	51897	12090	63987	5729	967	6696
5.	K-6	1068	253	1321	141	20	161
	TOTAL:	154100	27029	181129	22464	2162	24626

NOTE: The figures of areas irrigated and water requirements for the three decades have been taken from the "The agreed minor irrigation pargiculars in respect of areas irrigated in Krishna basin in Maharashtra-Mysore-Andhra Pradesh" signed by the Engineers of Maharashtra, Mysore and Andhra Pradesh States on 10.8.1971, and by the Counsel on 26.8.1971.

Sd/- H.M. Seervai
for the State of Maharashtra.
1.9.1971.

Sd/- P. Ramachandra Reddi
for the State of Andhra Pradesh.
1.9.71

Sd/- T. Krishna Rao,
for the State of Mysore.
1.9.1971

.....

THIRD SUPPLEMENTARY AGREEMENT ON MINOR IRRIGATION

STATEMENT SHOWING THE SUB-BASIN-WISE AVERAGE AREA IRRIGATED AND UTILISATION UNDER MINOR IRRIGATION WORKS IN KRISHNA BASIN IN MYSORE STATE FOR THE DECADE 1941-42 to 1950-51.

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Sl. No.	Sub-Basin:	Area irrigated in acres. 1st Crop	2nd Crop	Total	Utilisation in M.Cft. 1st Crop	II Crop	Total
1	K1	1,635	140	1,775	145	16	161
2	K2	11,450	2,865	14,315	2,120	936	3,056
3	K3	9,078	796	9,874	802	93	895
4	K4	41,873	1,073	42,946	3,224	165	3,389
5	K5	66	12	78	5	1	6
6	K6	18,749	7,652	26,401	5,283	2,847	8,130
7	K7	2,161	922	3,083	641	356	997
8	K8	2,99,310	4,869	304,179	45,343	1,847	47,190
9	K9	1,24,305	615	124,920	30,100	203	30,303
		5,08,627	18,944	527,571	87,663	6,464	94,127

STATEMENT SHOWING THE SUB-BASIN-WISE AVERAGE AREA IRRIGATED AND UTILISATION UNDER MINOR IRRIGATION WORKS IN KRISHNA BASIN IN MYSORE STATE FOR THE DECADE 1951-52 to 1960-61.

Sl. No.	Sub-Basin	Area irrigated in acres: 1st Crop	2nd Crop	Total	Utilisations in M.Cft. I Crop	II Crop	Total
1	K1	1,823	176	1,999	161	20	181
2	K2	13,733	879	14,612	2,354	112	2,466
3	K3	10,330	1,016	11,346	913	119	1,032
4	K4	51,131	1,224	52,355	3,904	136	4,040
5	K5	156	20	176	13	2	15
6	K6	20,743	579	21,322	5,788	181	5,969
7	K7	2,431	28	2,459	678	11	689
8	K8	3,06,568	10,521	3,17,089	45,427	2,510	47,937
9	K9	1,11,871	9,886	1,21,757	26,618	3,251	29,869
		5,18,786	24,329	5,43,115	85,856	6,342	92,198

100.

STATEMENT SHOWING THE SUB-BASIN-WISE AVERAGE AREA IRRIGATED AND UTILISATION UNDER MINOR IRRIGATION WORKS IN KRISHNA BASIN IN MYSORE STATE FOR THE PERIOD 1961-62 to 1966-67.

Sl. No.	Sub-Basin	Area irrigated in acres: 1st Crop	2nd Crop	Total	Utilisation in M.C.ft. I Crop	II Crop	Total
1	K1	1,750	20	1,770	155	2	157
2	K2	13,297	356	13,653	2,186	50	2,236
3	K3	10,193	174	10,367	898	19	917
4	K4	56,141	1,283	57,424	4,298	126	4,424
5	K5	231	22	253	19	2	21
6	K6	13,899	423	14,322	3,637	106	3,743
7	K7	1,914	13	1,927	597	5	602
8	K8	3,43,369	5,879	3,49,248	50,280	1,184	51,464
9	K9	1,19,292	11,335	1,30,627	28,932	3,809	32,741
		5,60,086	19,505	5,79,591	91,002	5,303	96,305

NOTE EXPLAINING THE PERCENTAGES ADOPTED TO CONVERT DISTRICT-WISE AREA IRRIGATED AND UTILISATION INTO SUB-BASIN-WISE AREA AND UTILISATION IN KRISHNA BASIN IN MYSORE STATE.

-.-.-.-.-

The District-wise areas and utilisations given as per the agreed statement of utilisation, filed before the Tribunal on 26.8.1971, have been converted into sub-basin-wise area and utilisations adopting the percentages of the districts in the sub-basin as given on pages 144 and 145 of Annexure VIII to the report of the Krishna-Godavari Commission in respect of all the districts except Belgaum, Bijapur, Gulbarga and Raichur for which the percentages have been worked out afresh since there were no percentages for K-1, K-5 and K-7 sub-basins in the Annexure - VIII to the Report of the Krishna Godavari Commission.

THE PERCENTAGES WORKED OUT FOR THE ABOVE DISTRICTS ARE AS FOLLOWS:

Sl. No.	District	K-1	K-2	K-3	K-4	K-5	K-6	K-7	K-8
1.	Belgaum	7	23	38	32	-	--	-	--
2.	Bijapur	-	45	12	12	4	27	-	--
3.	Gulbarga	-	15	--	--	-	79	6	--
4.	Raichur	-	17	--	3	-	--	7	73

Sd/- H. M. Seervai
for the State of Maharashtra.
1.9.1971

Sd/- P. Ramachandra Reddi,
for the State of Andhra Pradesh.
1.9.1971

Sd/- T. Krishna Rao
for the State of Mysore.
1.9.1971

...

Third Supplementary Aggreement on Minor Irrigation

STATEMENT SHOWING THE AVERAGE AREAS IRRIGATED AND UTILISATIONS UNDER MINOR IRRIGATION WORKS IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE DECADE 1941-42 to 1950-51.

31.8.1971.

Sl.No.	Sub-Basin.	Area Irrigated in acres			Utilisations in T.M.C.		
		I Crop.	II Crop.	Total.	I Crop.	II Crop.	Total.
1.	2.	3.	4.	5.	6.	7.	8.
1.	K6	15,724	3,935	19,659	2,357	0.984	3.341
2.	K7	1,46,671	33,069	1,79,740	22.241	8.302	30.543
3.	K8	17,953	3,616	21,569	3.341	0.998	4.339
4.	K9	21,531	4,330	25,861	4.306	1.299	5.605
5.	K10	86,794	15,689	1,02,483	13.012	3.897	16.909
6.	K11	22,729	2,497	25,226	3.408	0.625	4.033
7.	K12	72,680	4,479	77,159	10.900	1.120	12.020
Total in Andhra Pradesh		3,84,082	67,615	4,51,697	59.565	17.225	76.790

Note:- The district-wise areas and utilisation given as per agreed statement of utilisation, filed before the Tribunal on 26.8.71, has been converted into sub-basin-wise areas and utilisations adopting the percentage of districts in the sub-basins as given on page 144 of Annexure VIII of Krishna Godavari Commission report in respect of Andhra Pradesh.

STATEMENT SHOWING THE AVERAGE AREA IRRIGATED AND UTILISATION UNDER MINOR IRRIGATION WORKS IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE DECADE 1951-52 to 1960-61.

Sl. No.	Sub-Basin.	Area irrigated in acres			Utilisations in T.M.C.		
		I Crop.	II Crop.	Total.	I Crop.	II Crop.	Total.
1.	2.	3.	4.	5.	6.	7.	8.
1.	K6	19,986	2,036	22,028	3.000	0.509	3.509
2.	K7	2,34,899	37,500	2,72,399	35.598	9.422	45.020
3.	K8	29,897	3,538	33,435	5.446	1.009	6.455
4.	K9	24,725	8,755	33,480	4.945	2.627	7.572
5.	K10	1,05,056	20,328	1,25,384	15.758	5.082	20.840
6.	K11	37,416	6,138	43,554	5.613	1.533	7.146
7.	K12	1,50,511	12,554	1,63,065	22.578	3.131	25.709
Total in Andhra Pradesh		6,02,490	90,849	6,93,339	92.938	23.313	116.251

Note:- The District-wise areas and utilisation given as per agreed statement of utilisation, filed before the Tribunal on 26-8-'71, has been converted into sub-basin wise areas and utilisations adopting the percentage of districts in the sub-basins as given on page 144 of Annexure-VIII of Krishna Godavari Commission Report in respect of Andhra Pradesh.

AREAS

STATEMENT SHOWING THE AVERAGE/IRRIGATED AND UTILISATIONS UNDER MINOR IRRIGATION WORKS IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1961-62 to 1966-67.

* * * * * * * * *

S.No.	Sub-Basin.	Area irrigated in Acres.			Utilisations in T.M.C.		
		I crop	II crop	Total.	I crop	II crop	Total.
1.	2.	3.	4.	5.	6.	7.	8.
1.	K-6	26,462	3,716	30,178	3.970	0.922	4.892
2.	K-7	3,15,466	54,097	3,69,563	47.782	13:705	61.487
3.	K-8	37,810	11.437	49,247	6.887	3.337	10.224
4.	K-9	29,851	7,011	38,862	5.970	2.104	8.074
5.	K-10	1,44,190	24,926	1,69,116	21.629	6.231	27.860
6.	K-11	47,594	7,736	55,330	7.140	1.749	8.889
7.	K-12	1,70,564	24,531	1,95,095	25.584	6.133	31.717
Total in Andhra Pradesh		7,71,937	1,33,454	9,05,391	118.962	34.181	153.143

Note:- The district-wise areas and utilisations given as per agreed statement of utilisation filed before the Tribunal on 26.8.71, has been converted into sub-basin wise areas and utilisations adopting the percentage of district in the sub-basins as given on page 144 of Annexure VIII of K.G.C. report in respect of Andhra Pradesh.

PERCENTAGE OF THE PORTION OF THE DISTRICT LYING IN KRISHNA CATCHMENT DISTRIBUTED IN VARIOUS SUB-BASINS.

...

ANDHRA PRADESH

Sl.No.	Name of District	K6	K7	K8	K9	K10	K11	K12
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Anantapur.	- -	- -	- -	00%	- -	- -	- -
2.	Guntur.	- -	100%	- -	- -	- -	- -	- -
3.	Byderabad.	23%	18%	- -	- -	59%	- -	- -
4.	Khammam.	- -	- -	- -	- -	- -	16%	84%
5.	Krishna.	- -	17%	- -	- -	- -	7%	76%
6.	Kurnool.	- -	25%	66%	9%	- -	- -	- -
7.	Mahboobnagar.	2%	89%	7%	- -	2%	- -	- -
8.	Medak.	29%	- -	- -	- -	71%	- -	- -
9.	Nalgonda.	- -	54%	- -	- -	35%	11%	- -
10.	Warangal.	- -	- -	- -	- -	19%	13%	68%

Source:- Page 144 of K.G.C. Annexure VIII.

Sd/- H.M.Seervai,
for the State of Maharashtra. 1.9.1971

Sd/- P. Ramachandra Reddi,
for the State of Andhra Pradesh 1.9.1971

Sd/- T. Krishna Rao
for the State of Mysore. 1.9.1971.

KRISHNA

2nd September, 1971.

BEFORE THE KRISHNA WATER DISPUTES TRIBUNAL.

IN THE MATTER OF A WATER DISPUTE AND CONNECTED MATTERS REGARDING THE INTER-STATE RIVER KRISHNA AND THE RIVER VALLEY THEREOF-

. . . . . .

O R D E R.

The State of Andhra Pradesh and the State of Mysore through their respective Counsel have entered into an agreement (Annexure A). The agreement is received in evidence and is directed to be marked as Exhibit without any objection.

Sd/-
(R.S.Bachawat)
Chairman.

Sd/-
(Shamsher Bahadur)
Member.

Sd/-
(D.M.Bhandari)
Member.

New Delhi:

Dated, September 2,1971

Annexure A

AGREEMENT BETWEEN THE STATE OF MYSORE AND THE STATE OF ANDHRA PRADESH REGARDING PROTECTION TO IRRIGATION WORKS IN THEIR RESPECTIVE TERRITORIES IN VEDAVATHY SUB-BASIN.

It is agreed between the State of Mysore and the State of Andhra Pradesh that the State of Mysore will not put up any new work on the streams mentioned in Schedule (1) within the limits shown in the said Schedule and marked in the map appended herewith, without the previous consent of Andhra Pradesh to protect the irrigation interests under the existing irrigation works in Andhra Pradesh and similarly it is agreed that the State of Andhra Pradesh will not put up any new work on the streams mentioned in Schedule (2) within the limits shown in the said Schedule and marked in the map appended herewith, without the previous consent of Mysore State to protect the irrigation interests under the existing irrigation works in Mysore State.

It is further agreed between the State of Mysore and the State of Andhra Pradesh that the State of Mysore will not put up any new construction on Suvarnamukhi river so as to affect the supply of Agali tank in Andhra Pradesh for the irrigation of an ayacut of 884 acres, the supplies for which are drawn from the Agali Anicut in Mysore State.

Having regard to this concession the parties are agreed that the Tribunal need not decide issue No.IV.

Sd/-
(T.Krishna Rao)
Counsel
for the State of Mysore
2.9.71

Sd/-
(P.Ramachandra Reddi)
Counsel
for the State of Andhra Pradesh
2.9.71

92.

SCHEDULE-I

LIST OF STREAMS ON WHICH NO NEW CONSTRUCTIONS SHOULD BE UNDERTAKEN BY THE STATE OF MYSORE WITHOUT THE PREVIOUS CONSENT OF ANDHRA PRADESH:

. . .

Sl. No.	Name of the Stream or Catchment	Location in the Map.	Limits within which no new construction should be undertaken by Mysore without the previous consent of Andhra Pradesh.
1.	Hagari(Vedavathy)	A	From Vanivilas Sagar in Mysore upto Bhairavanithippa Dam in Andhra Pradesh.
2.	Dodderi tank halla (Garanihalla)	B	4½ miles up-stream of confluence with Hagari
3.	Talak tank halla (Garanihalla)	C	From the Salem-Bellary road bridge over this stream upto confluence with Hagari.
4.	Chinnahagari	D	Upto 16 miles upstream from Mysore-Andhra Pradesh boundary.
5.	Amarapuram tank catchment	E	Catchment of Amarapuram tank in Mysore State.
6.	Virapasamudram tank catchment	F	Catchment of Virapasamudram tank in Mysore State.
7.	Yeradkere tank catchment	G	Catchment of Yeradkere tank in Mysore State
8.	Rangasamudram tank catchment	H	Catchment of Rangasamudram tank in Mysore State.
9.	Nagalapuram tank catchment	I	Catchment of Nagalapuram tank in Mysore State.

(P.Ramachandra Reddi)

Sd/- (T.Krishna Rao)
Counsel
for the State of Mysore
2.9.71

Sd/-
Counsel
for the State of Andhra Pradesh.
2.9.71

SCHEDULE-2

LIST OF STREAMS ON WHICH NO NEW CONSTRUCTIONS SHOULD BE UNDERTAKEN BY THE STATE OF ANDHRA PRADESH, WITHOUT THE PREVIOUS CONSENT OF MYSORE.

. . .

Sl. No.	Name of the Stream	Location in the map.	Limits within which no new construction should be undertaken by Andhra Pradesh without the previous consent of Mysore State.
1.	Madalur Doddakere nale	J	Entire catchment of the nala in Andhra Pradesh.
2.	Madalur Gidaganahalli Kattenala	K	Entire catchment of the nala in Andhra Pradesh.
3.	Doddabanagere Doddakere nala	L	Entire catchment of the nala in Andhra Pradesh.
4.	Dharmapur tank nala	M	Entire catchment of the nala in Andhra Pradesh.
5.	Parasurampur Dodda-kere nala	N	Entire catchment of the nala in Andhra Pradesh.
6.	Kadehoda Achuvali-kere nala	O	Entire catchment of the nala in Andhra Pradesh.
7.	Parasurampura tank nala	P	Entire catchment of the nala in Andhra Pradesh.
8.	Gowripura Palyadakere nala	Q	Entire catchment of the nala in Andhra Pradesh.
9.	Jajur tank nala	R	Entire catchment of the nala in Andhra Pradesh.
10.	Thippareddihally Kyatanakere nala	S	Entire catchment of the nala in Andhra Pradesh.
11.	Oblapur tank nala	T	Entire catchment of the nala in Andhra Pradesh.
12.	Hagari (Vedavathi)	U	Below Bhairavanithippa Dam up to Andhra Pradesh Mysore border.
13.	Chinnahagari	V	From Mysore-Andhra Pradesh border upto itsconfluence with Vedavathy (Hagari)

Sd/- (T.Krishna Rao)
Counsel
for the State of Mysore
2.9.71

Sd/- (P.Ramachandra Reddi)
Counsel
for the State of Andhra Pradesh.
2.9.71

NO. PWD 77 BRA 70.

To

The Director of Administration,
National Commission on Agriculture
Vigyan Bhavan Annexe
New. Delhi.

Sir,

Sub:— Grant of permission to Dr. H.R. Arakeri, full time member of the National Commission on Agriculture, to appear as witness before the Krishna Waters Disputes Tribunal.

—x—

With reference to your letter no. 11-5/70-Adm. dated 31-8-1971 on the above subject, I am directed to state that the TA/DA of Dr. H.R. Arakeri in connection with his journey for appearing as a witness before the Tribunal will be met by this State Govt.

Yours faithfully,

D.S.
PWD(I).

Copy forwarded to the C.E. WRDO. for information.

Sl. No. 17. (88)

No. 11-5/70-Adm.
Government of India
National Commission on Agriculture
(Rashtriya Krishi Ayog)
....

Vigyan Bhavan Annexe,
New Delhi, the 31st August, 71.

To
The Secretary to the Government of Mysore,
Public Works & Electricity Department,
Bangalore.

Subject:- Grant of permission to Dr. H.R. Arakeri, full time Member of the National Commission on Agriculture, to appear as witness before the Krishna Waters Disputes Tribunal.

....

Sir,

I am directed to refer to your letter No. P.W.D.-77-BRA-70 dated 2.12.70 and this Commission's letter of even number dated 4.1.71, on the subject mentioned above, and to say that it is presumed that the TA/DA of Dr. H.R. Arakeri in connection with his journeys for appearing as a witness before the Tribunal would be met by the State Government.

Yours faithfully,

(V. Balasubramanian)
Director of Administration.

Sl. No. 10.

(87)

GOVERNMENT OF MYSORE

No. PWD 77 BRA 70.

MYSORE GOVERNMENT SECRETARIAT,
VIDHANA SOUDHA,
Dated, Bangalore, 3 Septr. 1971.

FROM

The *Secretary to the Government of Mysore*
Public Works & Elecy.Department,
BANGALORE.

To

The Chief Engineer,
Water Resources development Organisation,
BANGALORE.

Sir,

Sub:-Krishna Water Disputes Tribunal - Tendering evidence by Shri D.Doddaiah, Adviser Research Scheme applied to River Valley Projects (formerly Director, Mysore Engineering Research Station K.R.S.).

In continuation of Government letter of even number dated 19.8.1971, I am directed to forward herewith a copy of letter No.6037/F 107(A) dated 11-8-71 received from the Secretary, Central Board of Irrigation and Power, on the above subject, for favour of information.

Yours faithfully,

Sd/- M.Channappa,
Deputy Secretary to Government,
Public Works & Elecy.Department.

'Authorised for Issue'

3/9/71

Section Officer,
Public Works & Elecy.Department.

RRc/2.9.

ISSUED
Dated 3.9.71

Copy of the letter No.6037/F.107(A) dated 11th August 71 from the Secretary, Central Board of Irrigation & Power, Curzon Road, New Delhi-1, addressed to Shri D.Doddiah, Adviser, Central Board of Irrigation & Power, 589 Upper Palace Orchards, Bangalore-6, and copy forwarded to Shri Iftekhar Ahmed, Engineer-in-Chief and Additional Secretary, Vidhana Soudha, Bangalore with reference to his D.O.No.PWD 77 BEA 70 dated the 22nd July 1971 to Shri T.C.Mahapatra, President, C B I & P.

Sub:-Krishna Waters Disputes Tribunal - Tendering evidence by Shri D.Doddaiah, Adviser Research Scheme applied to River Valley Projects (formerly Director, Mysore Engineering Research Station, Krishnarajasagara).

With reference to endoresement on letter No.KWDT/1803, dated the 1st April 1971 on the above noted subject I have to state that the Government of India have no objection to your tendering evidence before the Krishna Water Disputes Tribunal in connection with the model studies conducted at the Central Water and Power Research Station, Poona on the Vijayawada anicut provided expenditure on TA/DA is met by the Government of Mysore.

Yours faithfully,

Sd/-

---

copy

RRc/2.9.

NO. PWD 77 BRA 70.

To. The C.E. WRDO. Bangalore.

Sir,

Sub:— Krishna water Disputes Tribunal - Tendering evidence by Shri D. Doddaiah, Adviser Research Scheme applied to River Valley Projects (Formerly Director, Mysore Engineering Research Station K.R.S.).

-

In continuation of Govt. letter of even No. dated 19-8-1971, I am directed to forward herewith a copy of letter No. 6037/F 107(A) dt. 11-8-71 received from the Secretary, Central Board of Irrgn & Power, on the above Subject, for favour of information.

Yours faithfully,

31/8/71

~~S.O.~~ DS(L)

~~PWD~~

31/8/71

May be issued under the Signature of S.O.

31/8/71

SL NO. 15. (84)

6037 /F.107(A)

Central Board of Irrigation and Power,
Curzon Road, New Delhi 1

11th August, 1971

To

Shri D. Doddiah,
Adviser, Central Board of Irrigation & Power,
589 Upper Palace Orchards, Bangalore 6

Sub: Krishna Waters Disputes Tribunal - Tendering evidence by Shri D. Doddiah, Adviser Research Scheme applied to River Valley Projects (formerly Director, Mysore Engineering Research Station, Krishnarajasagara)

Sir,

With reference to endorsement on letter No. KWDT/1803 dated the 1st April, 1971 on the above noted subject I have to state that the Government of India have no objection to your tendering evidence before the Krishna Water Disputes Tribunal in connection with the model studies conducted at the Central Water and Power Research Station, Poona on the Vijayawada anicut provided expenditure on TA/DA is met by the Government of Mysore.

Addl. Secy., PWD No. 1834 Date 26/8
Copy to CE/WRDO

Yours faithfully

25/8/71

Secretary,
Central Board of Irrigation and Power

6038/F107(A) 11-8-71

Copy of above forwarded to Shri Iftekhar Ahmed, Engineer-in-Chief and Additional Secretary, P.W. and Electricity Department, Mysore Government Secretariat, Vidhana Soudha, Bangalore with reference to his D.O.No. PWD 77 BRA 70 dated the 22nd July, 1971. to Shri T.C.Mahapatra, President, CBI & P. SL NO 4.

DSI

26/8

T1741

Sri. Khaleel Ahmed

26/8/71

PWD (GI. Irrgn).
No 3999 Date 27.8.71.

Secretary,
Central Board of Irrigation and Power

1 K
26/8

WILL YOU PL TAKE N CRASH MESZEPL+? GAPL+?/ Sl. No. 14

(83)

NEW DELHI D+

CHIFSEC BG 239

SPLCOM ND-593

NEW DLHI DATED 26=8.71 MESSAGE NO.510/71

FCOM CHIEF ENGINEER,W.R.D.O. CAMP NEW DELHI (VYSORE BHAVAN).

(THROUGH THE SPLCOM MYSORE NEW DELHI

TO SRI M. CHANNAPPA, DEPUTY SECRETARY,P.W.D., BANGALORE

((ATTENTION SRI A.V. SHANKAR RAO, EX. ENGR. P AND I,W.R.D.O.,

BANGALORE))

''PLEASE CONTACT DEPARTMENT OF ECONOMICS AND SATISTICS AND INTIAMTE SOURCES UNDER WHICH AREA IRRIGATED UNDER FOLLOWING PROJECTS HAVE BEEN CATEGORISED SUCH AS UNDER 'GOVERNMENT CANNALS',5 MAY BE

PL REPT PROJECTS.... ~~(YES PL) PL REPT FROM~~ PROJECTS..5

~~QVERY SORRY~~

~~NOT GTG YOU CLY PL+? (GAPL) SHAL I CONTUNE PL+?(YESPL) OK~~

....GOVERNMENT CANNALS' TANKS' OTHER SOURCES ETC.,' IN THEIR SEASON AND CROP REPORT OR THE STATISTICAL ABTRACT :::

1. ARESHANKAR BIJAR..BIJAPUR DISTT.
2. KALAK..L..KALASKOP BIJAPUR DISST.
3. KOLCHI WEIR BELGAUM DISTT.
4. NAGATHANA BIJAPUR DISTT.
5. RAMANAHALLI BIJAPUR DISTT.

Sri. Khaleel Ahmed. Information furnished through Sri. Shankara Rao on 27/8/71

28/8/71

IF NECESSARY THE DISTRICT STATISTICAL OFFICERS OF THESE DISTRICTS MAY BE CONTACTED JVER PHONE AND THE IMPO..INFORMATION SENT IMMEDIATELY '''CRASH''''

PWD (GI. Irrgn). 30.8.71 No. 4032 Date

----WATER RESOURCES ---

CHIFSEC BG 239 / PL ACK/BLD/W.M.TKS OVER PL+? ACKED TIME 5.

NOT GTG YOU CLY PL+

CHIFSEC BG 239 ACKED TIME 5.35 P.M. TNKSPL+?/ BI+?

Sl. No. 13.

(82)

K.G.TRIBUNAL
SECRET

GOVERNMENT OF MYSORE

Office of the Chief Engineer
Water Resources Development Organisation,
Anandarao Circle, P.B.No.6,
BANGALORE-9, dated 14 August 1971

No.WRD/KG/71

To

The Secretary to the Government of Mysore,
Public Works & Electricity Department,
Vidhana Soudha, Bangalore-1

Sir,

SUB: Krishna Water Disputes Tribunal

The following two points were discussed amongst Engineers of the States of Maharashtra, Mysore and Andhra Pradesh at Delhi.

1. Area irrigated in the Krishna basin above Vijayawada works in respect of Minor Irrigation and utilisations thereof for the period 1941-42 to 1966-67.

2. Utilisations upstream of Vijayawada Anicut in respect of Major and Medium Projects for the period 1901-02 to 1968-69.

I enclose herewith copies of the agreed statements in respect of the above two points. This is for kind information of Government.

Yours faithfully,

14/8/1971

Chief Engineer
W.R.D.O., Bangalore-9

DA: 2 Booklets.

The agreed Minor Irrigation particulars in respect of areas irrigated in the Krishna Basin in Maharashtra, Mysore and Andhra Pradesh have been furnished in the accompanying statements for each year for the period 1941-42 to 1966-67. The average duties have been agreed upon between the States. The average gross utilizations have been computed for the periods 1941-42 to 1950-51, 1951-52 to 1960-61 and 1961-62 to 1966-67 on the basis of the agreed average irrigated areas and the agreed average duties.

The statements of agreed areas and duties and of the computed water requirements therefrom which have been initialled by the Engineers representing the States of Andhra Pradesh, Mysore and Maharashtra will be signed by Counsel and handed in when the Tribunal reassembles on the 26th instant. This agreed document to be signed by Counsel will state that the above agreement is without prejudice to the rights and contentions of the parties on the question whether any minor irrigationis to be regarded as a protected use or not, and parties will be free to make their submission on that question.

(Sd)
Engineer,
Mysore.
10/81.

(Sd)
Engineer,
Maharashtra
10/81.

(Sd)
Engineer,
Andhra Pradesh.
10/81.

MAHARASHTRA

Abstract for the minor irrigation works in Maharashtra (Krishna basin) having utilisation less than 1.0 T.M.C. (excluding area under Lift Irrigation & Bandharas vide foot Note).

(Figures in acres)

Sr. No.	Year	Ahmednagar		Bhir		Osmanabad	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	3.	4.	5.	6.	7.	8.
1.	1941-42	336	24	306	72	26	2
2.	1942-43	320	42	1035	390	2420	1480
3.	1943-44	1258	280	2101	230	4545	1055
4.	1944-45	1135	176	1269	310	2662	1032
5.	1945-46	216	17	1269	310	2662	1032
6.	1946-47	344	30	1269	310	2662	1032
7.	1947-48	841	92	1847	258	682	39
8.	1948-49	307	36	1949	455	400	89
9.	1949-50	760	81	1727	110	404	80
10.	1950-51	2523	295	1373	160	557	-
Total of each District.		8040	1073	14145	2605	17020	5832
Average		804	107	1415	261	1702	583
Duty in acres/ mcft.		10.3	12.5	10.1	12.5	8.1	12.5
Water requirement in Mcft.		78	9	140	21	210	47

Sr. No.	Year	Poona & Bhor		Satara and Phaltan		Sangli, Miraj, Aundh, Jath.	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	9.	10.	11.	12.	13.	14.
1.	1941-42	9815	2460	35226	7600	3496	449
2.	1942-43	13526	3340	39533	9400	2655	450
3.	1943-44	3777	900	41153	9700	1675	135
4.	1944-45	4122	950	41756	10700	1618	131
5.	1945-46	5000	950	36127	7500	1496	196
6.	1946-47	5771	1080	37043	9650	1471	127
7.	1947-48	2992	495	36812	11100	1471	127
8.	1948-49	11596	1830	41905	11850	1471	127
9.	1949-50	7135	1320	33600	8700	4800	1300
10.	1950-51	9658	1980	33900	10600	6506	1680
Total of each District.		73392	15305	377055	96800	26659	4722
Average		7339	1531	37706	9680	2666	472
Duty in acres/ Mcft.		11.7	12.5	8.0	12.5	8.0	12.5
Water requirement in Mcft.		627	122	4713	774	333	38

Sr. No.	Year	Kolhapur & Chandgadh		Sholapur & Akkalkot		Total	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	15.	16.	17.	18.	19.	20.
1.	1941-42	54925	150	299	55	104429	10812
2.	1942-43	21398	151	251	60	81138	15313
3.	1943-44	27640	110	5455	1300	87604	13710
4.	1944-45	28658	210	213	47	81433	13556
5.	1945-46	22293	3589	165	36	69228	13630
6.	1946-47	19266	147	79	20	67905	12396
7.	1947-48	18816	100	90	23	63551	12234
8.	1948-49	19065	139	1919	460	78612	14977
9.	1949-50	21241	851	15773	3600	85440	16042
10.	1950-51	32967	221	298	61	87782	14997
Total of each District.		266269	5668	24542	5662	807122	137667
Average		26627	567	2454	566	80712	13767
Duty in acres/ mcft.		5.2	12.5	7.5	12.5		(12.5)
Water requirement in Mcft.		5120	45	327	45	11548	1101
						12649	

Sr. No.	Year	Ahmednagar		Bhir		Osmanabad	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1	2	3	4	5	6	7	8
1	1951-52	2523	295	1268	293	311	
2	1952-53	435	66	433	72	215	14
3	1953-54	651	110	635	190	1086	185
4	1954-55	1230	230	1297	467	112	13
5	1955-56	1412	221	1417	452	1353	
6	1956-57	1619	215	1164	300	2290	290
7	1957-58	1341	234	1192	310	79	10
8	1958-59	2503	386	1543	196	472	33
9	1959-60	3301	457	1648	202	158	26
10	1960-61	2593	353	1508	142	89	10
Total of each District.		17608	2567	12105	2624	6155	581
Average		1761	257	1210	262	616	58
Duty Acres/mcft.		10.3	12.5	10.1	12.5	8.1	12.5
Water requirement in Mcft.		171	21	120	21	76	5

Sr. No.	Year	Ahmednagar		Bhir		Osmanabad	
		Ist crop	2nd crop	Ist crop	2nd crop	Ist crop	2nd crop
1	2	3	4	5	6	7	8
1	1951-52	2523	295	1268	293	311	
2	1952-53	435	66	433	72	215	14
3	1953-54	651	110	635	190	1086	185
4	1954-55	1230	230	1297	467	112	13
5	1955-56	1412	221	1417	452	1353	
6	1956-57	1619	215	1164	300	2290	290
7	1957-58	1341	234	1192	310	79	10
8	1958-59	2503	386	1543	196	472	33
9	1959-60	3301	457	1648	202	158	26
10	1960-61	2593	353	1508	142	89	10
Total of each District.		17608	2567	12105	2624	6155	581
Average		1761	257	1210	262	616	58
Duty Acres/mcft.		10.3	12.5	10.1	12.5	8.1	12.5
Water requirement in Mcft.		171	21	120	21	76	5

(75)

Sr. No.	Year	Poona		Satara		Sangli	
		Ist crop	2nd crop	Ist crop	2nd crop	Ist crop	2nd crop
1.	2.	9.	10.	11.	12.	13.	14.
1.	1951-52	9658	1980	31000	9900	6506	1630
2.	1952-53	11595	2400	27200	7600	4600	850
3.	1953-54	18928	3900	36900	10950	3500	690
4.	1954-55	12009	2519	28800	10350	5100	1065
5.	1955-56	10207	1950	34400	10900	5300	1080
6.	1956-57	12487	2400	38700	12150	5100	1300
7.	1957-58	8321	735	34827	11400	4693	970
&. 8.	1958-59	14931	1585	43472	8100	7904	1266
9.	1959-60	117500	1840	47177	15300	7657	1611
10.	1960-61	13708	2050	49894	13900	9386	1250
Total of each District.		123594	21359	372370	110550	59746	11762
Average		12359	2136	37237	11055	5975	1176
Duty Acres/mcft.		11.7	12.5	8.0	12.5	8.0	12.5
Water requirement in Mcft.		1056	171	4655	884	747	94

Sr. No.	Year	Kolhapur & Gandgadh		Sholapur		Total	
		Ist crop	2nd crop	Ist crop	2nd crop	Ist crop	2nd crop
1.	2.	15.	16.	17.	18.	19.	20.
1.	1951-52	32967	221	19542	2820	103775	17189
2.	1952-53	34694	787	1587	255	80759	12044
3.	1953-54	33057	687	2282	510	97039	17222
4.	1954-55	38797	882	2083	440	89428	15966
5.	1955-56	38667	997	2678	570	95434	16170
6.	1956-57	40216	1140	2579	544	104155	18339
7.	1957-58	41765	820	3155	730	95373	15209
8.	1958-59	42668	930	4900	1050	118393	13546
9.	1959-60	48312	1860	4900	1100	124903	22396
10.	1960-61	55988	1305	4410	920	137566	19930
Total to each District.		407131	9629	48116	8939	1046825	168011
Average		40713	963	4812	894	104683	16801
Duty Acres/Mcft.		5.2	12.5	7.5	12.5	-	-
Water requirement in Mcft.		7829	77	642	72	15296	1345
						16641	

Sr. No.	Year	Ahmednagar		Bhir		Osmanabad	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	3.	4.	5.	6.	7.	8.
1.	1961-62	2682	346	1929	236	79	11
2.	1962-63	1967	266	1543	230	303	52
3.	1963-64	2325	330	1543	238	303	56
4.	1964-65	2325	306	2490	335	393	54
5.	1965-66	2861	367	2595	330	735	100
6.	1966-67	5007	785	4630	660	864	110
Total of each District.		17167	2400	14730	2029	2907	380
Average		2871	400	2455	338	484	63
Duty Acres/Mcft.		10.3	12.5	10.1	12.5	8.1	12.5
Water requirement in Mcft.		278	32	243	27	60	5

Sr. No.	Year	Poona		Satara		Sangli	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	9.	10.	11.	12.	13.	14.
1.	1961-62	14981	2040	49894	15200	10868	1880
2.	1962-63	13708	1970	49400	15200	13585	2210
3.	1963-64	20071	3580	48650	12750	13585	2380
4.	1964-65	15176	5500	55328	16500	13832	2140
5.	1965-66	17108	5560	57671	16700	15808	2120
6.	1966-67	21170	5060	45201	14500	12804	1330
Total of each District.		108164	23710	306153	90850	80522	12060
Average		18027	3952	51025	15141	13420	2010
Duty Acres/Mcft.		11.7	12.5	8.0	12.5	8.0	12.5
Water requirement in Mcft.		1540	316	6504	1211	1678	161

Sr. No.	Year	Kolhapur		Sholapur		Total	
		1st crop	2nd crop	1st crop	2nd crop	1st crop	2nd crop
1.	2.	15.	16.	17.	18.	19.	20.
1.	1961-62	56665	1015	6125	1450	143173	22178
2.	1962-63	50796	144	11026	2600	142418	22672
3.	1963-64	49637	2740	11271	3220	147484	25291
4.	1964-65	60955	1990	10781	2910	161280	29736
5.	1965-66	65695	5020	3820	1330	166443	31527
6.	1966-67	60503	6380	7596	1954	163815	30779
Total of each District		344251	17289	50719	13464	924613	162182
Average		57375	2881	8453	2244	154100	27029
Duty Acres/Mcft.		5.2	12.5	7.5	12.5	-	-
Water requirement in Mcft.		11034	230	1127	180	22464	2162
						24626	

Note: The District-wise areas of minor Irrigation given in the above statement do not include the areas under Lift Irrigation Schemes and Bandharas in Krishna Basin in Maharashtra, the utilisation of which are given as 19.0 T.M.C. vide C.M.P.No.16(46)/71-KWDT, dated 20th April 1971, filed by Maharashtra.

(10)

AREA IRRIGATED AND UTILISATION UNDER MINOR IRRIGATION WORKS IN KRISHNA BASIN IN MYSORE STATE (1941 - 42 TO 1966 -67)

-:ooo:-

Statement showing average area irrigated and utilisation under minor irrigation works, district-wise, in Mysore State, in Krishna basin for the decade 41-42 to 50-51.

Sl. No.	Year.	Bijapur		Belgaum		Dharwar	
		I crop	II crop	I crop	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1941-42	720	76	18,783	1,803	55,582	-
2.	1942-43	720	76	22,099	1,825	74,147	259
3.	1943-44	40	7	29,991	1,310	78,914	134
4.	1944-45	538	59	29,759	2,523	80,481	225
5.	1945-46	326	47	16,776	1,191	75,962	4,519
6.	1946-47	1,201	128	17,649	1,765	83,214	75
7.	1947-48	394	45	12,241	1,207	85,268	145
8.	1948-49	616	112	15,238	1,676	89,875	63
9.	1949-50	806	57	47,470	4,035	78,404	-
10.	1950-51	11,174	2,369	23,692	2,665	85,025	110
Total of each Dist.		16,535	2,976	233,698	20,000	786,872	5,530
Average (Acres)		1,654	298	23,370	2,000	78,687	553
Duty (Acres/ Mcft)		11.8	8.85	11.31	8.50	13.87	10.4
Water requirement in TMC.		0.140	0.034	2.066	0.235	5.673	0.053

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Statement showing average area irrigated and utilisation under Minor Irrigation, district-wise, in Mysore, in Krishna basin, for the decade 1941-42 to 1950-51.

Sl. No.	Year.	Bellary		Bidar		Chikkamagalur.	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	5	6	7	8
1.	1941-42	15,110	3,020	631	299	105,200	-
2.	1942-43	14,398	279	885	343	105,800	-
3.	1943-44	19,919	407	715	350	105,800	-
4.	1944-45	8,700	501	824	350	93,400	-
5.	1945-46	15,750	2,230	824	354	93,750	-
6.	1946-47	16,429	3,690	824	350	94,600	-
7.	1947-48	9,360	440	396	156	103,700	-
8.	1948-49	10,795	191	690	137	111,013	-
9.	1949-50	17,605	77	593	12	108,233	-
10.	1950-51	13,819	[illegible]	536	265	83,598	480
Total of each Dist:		141,868	10,[illegible]1	6,918	3,616	1,005,094	480
Average (Acres)		14,187	1,090	692	262	100,509	48
Duty (Acres/Mcft)		3.42	2.60	6.82	5.10	5.33	4.00
Water requirement in TMC.		4.148	0.419	0.102	0.051	18.880	0.012

Sl. No.	Year.	Chitradurga		Gulbarga		Hassan.	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	5	6	7	8
1.	1941-42	41,377	-	29,603	26,800	20,742	-
2.	1942-43	39,992	-	23,750	19,100	21,058	-
3.	1943-44	48,777	-	20,550	10,275	21,288	-
4.	1944-45	45,607	-	26,590	8,560	21,447	-
5.	1945-46	33,742	-	26590	8,560	21,448	-
6.	1946-47	43,229	229	26,590	8,560	21,448	-
7.	1947-48	70,797	-	17,085	1,325	21,448	-
8.	1948-49	83,780	-	19,350	255	15,838	-
9.	1949-50	39,652	-	18,100	7,860	14,328	-
10.	1950-51	36,290	-	14,400	6	15,155	
Total of each Dist:		483,243	229	222608	91,301	194,200	-
Average (Acres)		48,324 7	23	22,261	9,130	1,942	
Duty (Acres/Mcft)		3.36	2.52	3.42	2.60	3.18	8.38
Water requirement in TMC.		14.382	0.010	6.510	3.511	6.106	-

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Sl. No.	Year.	Kanara		Raichur		Shimoga	
		I crop	II crop	I crop	II Crop	I Crop	II crop.
1	2	3	4	5	6	7	8
1.	1941-42	1,032	60	16,800	15,200	163,885	-
2.	1942-43	973	-	17,850	12,138	155,644	-
3.	1943-44	953	-	17,300	2,650	157,453	-
4.	1944-45	941	-	14,220	5,940	169,648	-
5.	1945-46	973	-	14,220	5,940	165,511	-
6.	1946-47	953	-	14,220	5,940	164,248	-
7.	1947-48	941	-	5,890	2,380	160,323	-
8.	1948-49	1,420	-	4,400	202	159,260	-
9.	1949-50	1,543	-	9,500	2,620	113,105	-
10.	1950-51	2,630	1	4,200	-	116,181	-
Total of each Dist:		12,259	61	118,605	53,010	1,525,258	-
Average (acres)		1,226	6	11,860	5,301	152,526	-
Duty (acres/Mcft)		4.88	3.66	3.33	2.55	7.81	5.85
Water requirement in TMC.		0.251	0.002	3.561	2.079	19.529	-

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(65)

Sl. No.	Year	Tumkur		Total for the State.	
		I crop	II crop	I crop	II crop
1	2	3	4		
1.	1941-42	40,949	110	510,414	47,368
2.	1942-43	34,065	-	511,373	34,020
3.	1943-44	38,466	2,231	540,157	17,364
4.	1944-45	34,659	-.	526,805	18,158
5.	1945-46	27,050	-	492,922	22,841
6.	1946-47	33,420	-	518,025	20,737
7.	1947-48	36,405	-	524,248	5,698
8.	1948-49	34,156	-	546,431	2,636
9.	1949-50	33,101	-	482,440	14,661
10.	1950-51	26,851	-	433,451	5,962
Total of each District.		339,121	2,341	5,086,266	189,445
Average (Acres)		33,912	234	508,627	18,944
Duty (Acres/Mcft)		5.37	4.00	-	-
Water requirement in TMC.		6.315	0.058	87,663	6.464

GRAND TOTAL 94.127 TMC

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Statement showing average area irrigated and utilisation under Minor Irrigation Works, district-wise, in Mysore State in Krishna basin for the decade 1951-52 to 1960-61.

Sl. No.	Year	Bijapur		Belgaum		Dharwar	
		I crop	II crop	I crop	II crop	I crop	II crop
1	2	3	4	5	6	7	8
1.	1951-52	11,171	2,369	23,692	2,665	85,025	110
2.	1952-53	1,895	154	20,462	1,895	87,597	227
3.	1953-54	1,573	368	24,622	1,925	92,187	332
4.	1954-55	1,395	243	26,096	1,957	93,288	252
5.	1955-56	1,657 ~~1,671~~	189 ~~152~~	26,739	1,283	97,758	215
6.	1956-57	1,671	152	27,400	1,915	99,000	624
7.	1957-58	2,590	176	30,112	1,584	103,189	206
8.	1958-59	7,092	50	26,849	830	100,957	60
9.	1959-60	4,485	368	28,506	9,806	109,485	197
10.	1960-61	5,600	1,030	25,650	1,280	106,200	6,100
	Total of each Dist.	39,132	5,108	260,128	25,140	974,686	8,323
	Average (acres)	3,913	511	26,013	2,514	97,469	832
	Duty (Acres/Mcft)	11.8	8.85	11.31	8.50	13.87	10.4
	Water requirement in TMC.	0.332	0.057	2.300	0.295	7.027	0.080

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Sl. No.	Year	Bellary		Bidar		Chikkamagalur.	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	5	6	7	8
1.	1951-52	12,323	2,736	677	33	83,598	486
2.	1952-53	13,749	19,936	669	58	95,243	-
3.	1953-54	13,189	-	641	185	104,250	-
4.	1954-55	11,466	-	561	103	107,751	-
5.	1955-56	16,214	-	711	107	126,556	-
6.	1956-57	17,181	-	64	1	112,200	45
7.	1957-58	15,291	1,177	172	26	112,600	3,490
8.	1958-59	16,109	725	80	14	96,745	6,172
9.	1959-60	17,075	135	388	61	97,696	35,366
10.	1960-61	19,000	-	394	68	80,400	4,832
Total of each dist.		161,597	24,709	4,357	656	1017,039	50,390
Average (Acres)		15,160	2,471	436	66	101,704	5,039
Duty (Acres/Mcft)		3.42	2.60	6.82	5.1	5.33	4.00
Water requirement in TMC.		4.432	0.950	0.064	0.013	19.081	1.259

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Sl. No.	Year.	Chitradurga		Gulbarga		Hassan.	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	5	6	7	8
1.	1951-52	36,290	-	34,600	-	15,151	-
2.	1952-53	34,600	344	11,700	366	15,515	-
3.	1953-54	42,719	-	34,400	1,495	14,350	-
4.	1954-55	41,348	-	42,300	2,005	15,410	-
5.	1955-56	45,015	-	41,000	735	15,410	-
6.	1956-57	45,782	-	13,654	3	15,650	11
7.	1957-58	45,842	2,796	15,558	37	15,793	663
8.	1958-59	40,598	4,304	15,683	92	17,430	8,366
9.	1959-60	37,105	5,269	18,340	-	12,983	10,192
10.	1960-61	35,000	3,750	16,600	-	13,100	9,650
	Total of each Dist.	404,299	17,063	243,835	4,733	150,792	28,882
	Average (Acres)	40,430	1,706	24,384	473	15,079	2,888
	Duty (Acres/Mcft)	3.36	2.52	3.42	2.60	3.18	2.38
	Water requirement in TMC.	12.033	0.677	7.130	0.182	4.742	1.213

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Sl. No.	Year	Kanara		Raichur		Shimoga	
		I crop	II crop	I crop	II crop.	I crop	II crop
1	2	3	4	5	6	7	8
1.	1951-52	2,530	1	9,550	-	116,181	-
2.	1952-53	3,220	-	5,000	-	122,774	-
3.	1953-54	3,226	-	6,740	-	122,774	40,515
4.	1954-55	2,946	-	17,150	-	122,773	-
5.	1955-56	3,180	-	22,200	-	120,737	-
6.	1956-57	2,780	95	15,882	-	160,000	-
7.	1957-58	3,554	163	17,165	-	159,802	3,004
8.	1958-59	3,026	411	11,706	-	166,280	-
9.	1959-60	2,741	32	15,530	14	188,4[illegible]	
10.	1960-61	2,846	22	15,180	38	185,200	
	Total of each Dist.	30,249	724	136,723	52	1466,019	43,519 43,519
	Average (Acres)	3,025	72	13,672	5	146,602	4,352
	Duty (Acres/Mcft)	4.88	3.66	3.33	2.55	7.81	5.85
	Water requirement in Mcft.	0.620	0.020	3.569	0.002	18.771	0.744

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Sl. No.	Year.	Tumkur		Total	
		I Crop	II Crop	I Crop	II Crop
1	2	3	4		
1.	1951-52	26,851	-	457,942	8,399
2.	1952-53	26,494	-	438,918	23,530
3.	1953-54	27,226	-	487,897	44,820
4.	1954-55	29,140	-	511,624	4,560
5.	1955-56	29,114	-	546,291	2,529
6.	1956-57	32,750	-	544,214	2,846
7.	1957-58	32,789	1,082	554,457	14,404
8.	1958-59	38,278	21,474	540,833	42,507
9.	1959-60	39,916	4,989	573,748	66,429
10.	1960-61	26,450	6,450	532.240	33,220
Total of each Dist.		309,008	33,995	5,187,864	243,294
Average (Acres)		30,901	3.400	518,786	24,329
Duty (Acres/Mcft)		5.37	4.00		
Water requirement in TMC.		5.755	0.850	85.856	6.342

Grand Total: 92,198 TMC.

....11.

Statement showing average area irrigated and utilisation under Minor Irrigation works, district-wise, in Mysore in Krishna basin for the decade 1961-62 to 1966-67

Sl. No.	Area:	Bijapur		Belgaum		Dharwar.	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	5	6	7	8
1.	1961-62	3,836	470	27,365	76	107,381	4,080
2.	1962-63	3,998	299	26,078	824	102,534	6,531
3.	1963-64	5,472	511	25,200	428	110,950	1,489
4.	1964-65	6,717	1,240	24,442	-	110,000	-
5.	1965-66	6,670	285	25,100	90	118,222	981
6.	1966-67	7,954	N.A.	21,819	N.A.	106,222	N.A.
	Total of Each Dist:	34,647	2,805	150,004	1,418	655,309	13,081
	Average (acres)	5,775	561	25,001	283	109,218	2,616
	Duty (Acres/Mcft)	11.8	8.85	11.3	8.50	13.87	10.4
	Water requirement in Mcft.	0.489	0.063 7	2.212	0.033	7.874	0.252

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Sl. No.	Year.	Bellary		Bidar		Chikkamagalur	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	5	6	7	8
1.	1961-62	23,408	-	383	66	111.430	3.164
2.	1962-63	23,916	4,161	383	28	104,318	-
3.	1963-64	21,102	-	448	45	71,225	-
4.	1964-65	16,286	-	940	117	78,000	-
5.	1965-66	16,943	120	925	240	78,862	252
6.	1966-67	16,252	N.A.	1,308	N.A.	83,747	N.A.
Total of each Dist.		117,907	4,281	4.387	496	527,582	3,416
Average (Acres)		19,651	856	731	99	87,930	683
Duty (Acres/Mcft)		3.42	2.65	6.82	5.1	5.33	4.00
Water requirement in TMC.		5.745	0.329	0.107	0.020	16.497	0.171

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Sl. No.	Year	Chitradurga		Gulbarga		Hassan.	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	5	6	7	8
1.	1961-62	49,116	5,745	16,736	-	18,791	11,556
2.	1962-63	48,656	1,095	16,923	-	22,470	2,422
3.	1963-64	40,948	885	9,335	-	23,995	-
4.	1964-65	40,855	1,740	9,524	-	23,200	566
5.	1965-66	19,745	7,147	17,741	1,103	22,262	463
6.	1966-67	31,756	N.A.	17,962	N.A.	19,919	N.A.
	Total of each Dist.	231,076	16,582	88,221	1,103	130,637	15,007
	Average (Acres)	38,513	3,316	14,703	221	21,773	3,001
	Duty (Acres/Mcft)	3.36	2.52	3.42	2.60	3.14	2.38
	Water requirement in TMC.	11.462	1,316	4.299	0.085	6.934	1.261

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Sl. No.	Year	Kanara		Raichur		Shimoga	
		I crop	II crop	I crop	II crop	I crop	II crop.
1	2	3	4	5	6	7	8
1.	1961-62	2,816	64	15,915	-	185,970	-
2.	1962-63	2,775	2	15,834	-	187,382	2,061
3.	1963-64	2,618	32	15 980	-	187,250	2,456
4.	1964-65	2,540	35	16,188	-	180,100	4,000
5.	1965-66	2,615	22	15,780	169	181,920	3,383
6.	1966-67	2,314	N.A.	17,052	N.A.	170,567	N.A.
Total of each Dist.		15,678	155	96,739	169	1,093,189	11,902
Average (Acres)		2,613	31	16,123	34	182,198	2,380
Duty (Acres/Mcft)		4.88	3.16	3.33	5.0	7.81	5.85
Water requirement in TMC.		0.535	0.010	4.842	0.007	23.328	0.304

Sl. No.	Year.	Tumkur		Total for the State.	
		I crop	II crop	I crop	II crop.
1	2	3	4	5	6
1.	1961-62	36,970	5,360	600,117	30,581
2.	1962-63	40,232	4,827	595,499	22,250
3.	1963-64	42,460	5,010	556,983	10,828
4.	1964-65	40,500	5,520	549,242	13,218
5.	1965-66	24,966	6,391	531,751	20,646
6.	1966-67	30,062	N.A.	526,924	-
Total of each Dist.		215,190	27,108	3,360,516	97,523
Average (acres)		35,865	5,422	560,086	19,505
Duty (Acres/Mcft)		5.37	4.00	90.914	5.827
Warer requirement in T.M.C.		6.678	1.355	91.002	5.303

Grand Total: 96.305 TMC

STATEMENTS SHOWING THE YEAR-WISE IRRIGATED AREAS AND UTILISATIONS IN KRISHNA BASIN IN ANDHRA PRADESH FOR M.I. SCHEMES TANKS AND DIVERSIONS FROM 1941-42 TO 1966-67.

GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1941-42 TO 1950-51.

Sl. No. 1.	Year. 2.	Anantapur. I Crop. 3.	Anantapur. II Crop. 4.	Guntur. ICrop. 5.	Guntur. II Crop. 6.	Hyderabad. I crop. 7.	Hyderabad. II Crop. 8.	Khammam. I Crop. 9.	Khammam. II Crop. 10.	Krishna. I Crop. 11.	Krishna. II Crop. 12.
1.	1941-42	15197	5941	9104	2	63014	40497	..	..	28427	708
2.	1942-43	13721	3226	9393	..	38978	14109	..	..	33380	417
3.	1943-44	21577	4290	10084	19	45955	8866	..	..	33541	14
4.	1944-45	19637	4051	6445	11	42200	14732	..	..	31700	94
5.	1945-46	17868	2150	12193	399	42198	14733	..	..	39223	326
6.	1946-47	21224	5013	9141	20	33034	6719	..	..	42530	13
7.	1947-48	20504	2024	10932	..	38691	4506	..	..	32759	..
8.	1948-49	22066	4378	11010	..	34193	23	..	..	24650	2
9.	1949-50	18603	3616	12490	..	34885	2829	..	..	38240	1912
10.	1950-51	27240	6054	11650	..	21300	1307	..	..	21160	84
Total of each District..		197637	40743	102442	451	394448	108321	..	..	325610	3570
Average of each District..		19764	4074	10244	45	39444	10832	..	..	32561	357
Duty in Acres per M.Cft..		5	3 1/3	6 2/3	4	6 2/3	4	..	..	6 2/3	4
Water requirement in TMC..		3.953	1.222	1.537	0.011	5.917	2.708	..	..	4.884	0.094

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GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS1941-42 to 1950-51.

S.No.	Year.	Kurnool		Mahaboobnagar		Medak		Nalgonda		Warangal		Grand total	
		I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I crop.	II Crop.
1.	2.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
1.	1941-42	15886	3229	111832	19441	17260	4916	99543	24089	55904	11237	416167	110060
2.	1942-43	17718	2576	90990	24623	17212	5232	116317	25357	55904	11122	393613	86662
3.	1943-44	20568	2205	74575	32435	19197	5912	112360	23820	76486	5595	414313	83156
4.	1944-45	17771	2852	70065	36217	15930	3219	102483	17320	75209	4286	381440	82782
5.	1945-46	18811	1774	70065	36217	15930	3219	102483	17320	75209	4286	393980	80424
6.	1946-47	24026	4042	70065	36217	15930	3219	102483	17320	75209	4286	393642	76849
7.	1947-48	23701	3155	65348	33517	18123	2392	87531	17069	80247	2367	377836	65030
8.	1948-49	19791	2522	49320	24231	17296	1507	84942	9340	54150	6764	317418	48767
9.	1949-50	17771	3998	59805	4538	23560	659	96268	--	76560	4748	378182	22300
10.	1950-51	20320	2086	51205	1040	19736	2368	121530	--	80040	7196	374181	20135
Total of each District.		196363	28439	713270	248476	180174	32643	1025940	151635	704918	61887	3840772	676165
Average of each District.		19636	2844	71327	24847	18017	3264	102594	15164	70492	6189	384079	67616
Duty in Acre per MCft.		5	3½	6½	4	6⅔	4	6⅔	4	6⅔	4		
Water requirement in TMC.		3.927	0.853	10.749	6.212	2.702	0.816	15.389	3.791	10.574	1.547	59.632	17.254

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GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1951-52 TO 1960-61.

Sl. No.	Year.	Anantapur.		Guntur.		Hyderabad.		Khammam.		Krishna.	
		I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.	1951-52	19697	5321	12900	38	24845	174	..	..	48150	6306
2.	1952-53	19342	7672	10090	242	10680	277	..	..	22940	46
3.	1953-54	23780	14540	11880	249	22988	293	41971	197	43640	1370
4.	1954-55	18900	8448	11140	229	29462	128	40420	485	45470	2183
5.	1955-56	23710	11030	19660	519	32246	4559	39940	..	52140	4645
6.	1956-57	27830	8266	10590	162	75680	341	42530	..	56350	3942
7.	1957-58	19881	5368	18705	8037	54619	..	54946	..	59172	5621
8.	1958-59	21510	8561	13240	358	49730	6666	58600	..	61420	3704
9.	1959-60	23540	7907	10290	1353	55810	17130	62470	212	71990	9683
10.	1960-61	22840	7060	12180	579	50710	5110	56740	142	76500	11360
Total of each District..		221030	84173	130675	11766	406770	34679	397617	1036	537772	48860
Average of each District..		22103	8417	13068	1176	40677	3468	49702	129	53777	4886
Duty in acres per MCFT..		5	3⅓	6⅔	4	6⅔	4	6⅔	4	6⅔	4
Water requirement in TMCFT..		4.421	2.525	1.960	0.294	6.101	0.867	7.455	0.032	8.066	1.221

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GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS1951-52 to 1960-61.

S.No.	Year.	Kurnool		Mahboobnagar		Medak		Nalgonda		Warangal		Grand Total	
		I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II. Crop.	I Crop.	II Crop.	I Crop.	II Crop.
1.	2.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
1.	1951-52	24671	2417	108015	..	26987	1485	124100	..	98107	171	487472	15912
2.	1952-53	27224	3460	93014	4717	20900	234	59034	1842	59387	959	322611	19449
3.	1953-54	23730	8021	129945	9705	31644	2500	110190	25344	111000	8769	550768	70988
4.	1954-55	28280	3648	145779	6013	26640	3196	99304	31570	96850	8612	542245	64512
5.	1955-56	38190	560	175233	17730	22790	4690	115199	50810	96470	16540	615578	111083
6.	1956-57	25680	2552	192062	31850	28360	5794	151953	56190	116300	19800	727335	128897
7.	1957-58	28032	2467	161660	20692	25668	2566	124354	44950	97583	13759	644620	103460
8.	1958-59	29820	6621	177368	22530	26640	5489	135017	65880	113600	26590	686945	146399
9.	1959-60	33420	2985	198949	26250	29020	5225	138950	53930	117500	23390	741939	148065
10.	1960-61	32290	4827	141980	11790	22810	1079	98339	48480	91580	8974	665969	99401
Total of each District.		291337	37558	1524005	151277	261459	32258	1156440	378996	998377	127564	5925482	908176
Average of each Dist.		29134	3756	152400	15128	26146	3226	115644	37900	99838	12756	602489	90842
Duty in acres per Mcft.		5	3 1/3	6 2/3	4	6 2/3	4	6 2/3	4	6 2/3	4		
Water requirement in TMcft.		5.827	1.127	22.860	3.782	3.922	0.806	17.347	9.475	14.997	3.189	92.956	23.318

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GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1961-62 TO 1966-67.

Sl. No.	Year.	Anantapur.		Guntur.		Hyderabad.		Khammam.		Krishna.	
		I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	ICrop.	II Crop.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.	1961-62	22739	4059	12100	7986	60810	4037	59750	1504	52081	10258
2.	1962-63	32803	7727	10003	1481	77347	5842	56400	2628	64185	14906
3.	1963-64	29803	7391	11534	1908	72939	10868	49623	2630	62662	7268
4.	1964-65	32512	8707	39725	3374	67630	11480	60851	2792	55186	15443
5.	1965-66	19600	2047	15040	1529	57770	12190	63420	1966	52930	7482
6.	1966-67	21860	4328	23050	4494	42060	10580	60630	1504	56770	15190
Total of each District..		159217	34259	111452	20772	378556	54997	350674	13024	343814	70547
Average of each District..		26536	5710	18575	3462	63093	9166	58446	2171	57302	11758
Duty in Acres per MCFT..		5	$3\frac{1}{3}$	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4	$6\frac{2}{3}$	4
Water requirement in TMC..		5.307	1.713	2.786	0.865	9.464	2.191	8.767	0.542	8.595	2.939

GENERAL ABSTRACT SHOWING THE ANNUAL IRRIGATED AREAS UNDER MINOR IRRIGATION SCHEMES IN KRISHNA BASIN IN ANDHRA PRADESH FOR THE YEARS 1961-62 to 1966-67.

S.No.	Year.	Kurnool		Mahaboobnagar		Medak		Nalgonda		Warangal		Grand Total.	
		I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.	I Crop.	II Crop.
1.	2.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
1.	1961-62	35814	7378	232486	20403	31202	3286	235278	39068	117255	25796	859515	123775
2.	1962-63	33576	6999	203598	27851	29969	3403	236185	9750	114542	20514	858608	101101
3.	1963-64	38720	16520	202373	32582	28370	4653	198450	11709	106863	12717	799337	108250
4.	1964-65	38293	19000	208547	33465	27609	4135	139734	66339	108370	26506	778457	191241
5.	1965-66	37840	15130	170200	23830	24790	3546	133200	42630	116000	13320	690690	123670
6.	1966-67	38740	21740	140100	24080	25510	3061	111800	45055	124500	22660	645020	152692
Total of each District.		220983	86771	1157304	162211	167450	22084	1054647	214551	687530	121513	4631627	800729
Average of each Dist.		36831	14462	192884	27035	27908	3681	175775	35758	114588	20252	771938	133455
Duty in Acres per MCft.		5	3½	6⅔	4	6⅔	4	6⅔	4	6⅔	4		
Water Requirement in TMC.		7.366	4.338	28.933	6.759	4.186	0.920	26.266	8.939	17.188	5.063	118.358	34.269

Abstract No.1

Consolidated abstract of figures of gross upstream utilisations excluding the utilisations of the Krishna Delta for the year 1901-02 to 1950-51 for major and medium projects in the basin states of the Krishna Basin as agreed to during the joint discussions of Engineers of Maharashtra, Mysore and Andhra Pradesh on 29-7-71 and 30-7-71 for purpose of computing upstream utilisations only. (Figures for protected uses have been separately given).

Sr.No.	Year	Total utilisation in Maharashtra Mysore and Andhra Pradesh.	Sr.No.	Year	Total utilisation in Maharashtra, Mysore and Andhra Pradesh.
1.	2.	3.	1.	2.	3.
1.	1901-02	55.84	14.	1914-15	73.09
2.	1902-03	56.10	15.	1915-16	63.47
3.	1903-04	56.36	16.	1916-17	63.47
4.	1904-05	56.62	17.	1917-18	63.47
5.	1905-06	56.88	18.	1918-19	71.30
6.	1906-07	59.82	19.	1919-20	71.30
7.	1907-08	60.45	20.	1920-21	71.30
8.	1908-09	60.83	21.	1921-22	71.30
9.	1909-10	61.18	22.	1922-23	82.00
10.	1910-11	61.59	23.	1923-24	82.00
11.	1911-12	61.96	24.	1924-25	82.18
12.	1912-13	62.34	25.	1925-26	82.27
13.	1913-14	62.72	26.	1926-27	82.63

contd...2

Sl.No.13.C.

Sr. No.	Year	Total utilisation in Maharashtra, Mysore and Andhra Pradesh.	Sr. No.	Year	Total utilisation in Maharashtra, Mysore and Andhra Pradesh.
1.	2.	3.	1.	2.	3.
27.	1927-28	93.28	41.	1941-42	137.95
28.	1928-29	93.20	42.	1942-43	139.13
29.	1929-30	118.78	43.	1943-44	151.48
30.	1930-31	122.79	44.	1944-45	149.94
31.	1931-32	125.79	45.	1945-46	147.95
32.	1932-33	128.76	46.	1946-47	151.44
33.	1933-34	131.75	47.	1947-48	150.26
34.	1934-35	134.73	48.	1948-49	152.22
35.	1935-36	137.70	49.	1949-50	146.95
36.	1936-37	140.37	50.	1950-51	152.80
37.	1937-38	143.59			
38.	1938-39	144.17			
39.	1939-40	144.75			
40.	1940-41	145.07			

(1) Figures in col.3 are based on figures supplied by Central Water and Power Commission to the three States vide Central Water and Power Commission letter No.KGC.21(9)/65, dated 6-12-1965.

Abstract No.2

Consolidated abstract of figures of gross upstream utilisations (excluding Krishna Delta utilisations) for the year 1951-52 to 1968-69 for major and medium projects in the basin states of the Krishna Basin as agreed to (except to the extent indicated in the foot-note) during the joint discussions of Engineers of Maharashtra, Mysore and Andhra Pradesh on 29-7-1971 and 30-7-1971 for purpose of computing upstream utilisations only. (Figures for protected uses have been separately given).

Sr. No. 1.	Year 2.	Maharashtra (Statement No. 1) 3.	Mysore (Statement No. 2) 4.	Andhra Pradesh (Statement No. 3) 5.	Total 6.
1.	51-52	85.29	21.36	55.06	161.71
2.	52-53	85.94	21.36	49.30	156.60
3.	53-54	91.60	35.50	67.48	194.58
4.	54-55	94.92	35.29	60.31	190.52
5.	55-56	97.30	43.10	55.74	196.14
6.	56-57	102.70	49.31 (48.17)	63.09	215.10 (213.96)
7.	57-58	102.26	65.70 (63.96)	74.08	242.04 (240.30)
8.	58-59	106.55	70.35 (67.87)	87.32	264.62 (262.14)
9.	59-60	115.81	81.57 (77.17)	90.06	287.44 (283.04)
10	60-61	112.00	92.19 (82.61)	112.16	316.35 (307.37)
11	61-62	124.18	89.65 (85.44)	104.31	318.14 (312.93)

contd...2.

Sr. No.	Year	Maharashtra (Statement No.1)	Mysore (Statement No.2)	Andhra Pradesh (Statement No. 3)	Total
12.	62-63	117.14	92.55 (89.16)	114.06	323.75 (320.36)
13.	63-64	162.01	101.98 (95.65)	120.10	384.09 (377.76)
14.	64-65	166.63	108.00 (100.62)	112.09	387.32 (379.34)
15.	65-66	168.12	129.93 (119.35)	123.68	421.73 (411.15)
16.	66-67	195.42	165.87 (147.90)	140.64	501.93 (483.96)
17.	67-68	211.43	188.11 (168.20)	243.87	643.41 (623.50)
18.	68-69	204.16	202.85 (182.87)	314.65	721.66 (701.68)

Notes:- (1) The figures given in brackets are according to Andhra Pradesh's estimates of utilisations of Mysore's Tungabhadra Project Left Bank Canal and Bhadra Reservoir, the figures outside brackets being Mysore's estimates with which Maharashtra have agreed.

STATEMENT NO. 1

Krishna Basin yearwise gross utilizations of Major and Medium Project in Maharashtra for the period 1951-52 to 1968-69 as discussed and agreed in the meeting of Engineers on 29-7-1971 and 30-7-1971.

Sr. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
1.	Tata Hydro Electric Schemes (Including lake losses)	7.90	6.67	7.62	6.57	7.59	9.44	6.64	8.49	10.64	7.77	11.10	8.73	8.59
2.	Andhra Valley Power Station(Including lake losses).	7.96	9.05	8.70	9.30	9.71	11.01	10.42	11.51	13.26	9.71	14.17	9.70	11.14
3.	Mulshi lake(Including lake losses)	24.85	25.37	26.22	28.36	28.09	29.19	26.34	26.92	27.43	27.53	32.49	31.24	30.35
4.	Mutha System Ex. Khadakwasla(Including lake losses)	5.36	5.10	5.90	6.61	5.86	5.38	5.36	5.10	5.02	5.28	-	-	-
5.	Nira System Ex. Vir (Including lake losses).	30.74	33.98	37.27	33.95	35.02	33.73	35.91	33.66	35.48	36.21	39.28	36.39	39.81

Sr. No.	Name of Project	64-65	65-66	66-67	67-68	68-69	Remarks
1.	Tata Hydro Electric Schemes(Including lake losses).	7.16	6.61	4.95	5.92	6.26	For 51-52 Average utilisation is taken from K.G.C. Annexure VIII page 57-59. 52-53 to 60-61 withdrawals taken from K.G.C.Annexure IV,page 12 to 13 and Lake losses from Annexure VIII,page 57. 61-62 to 67-68 MRDK-V page 34-40. For 68-69 May withdrawals (which are Not Available) are taken as Average of 61-62 to 67-68 and are added to other months.
2.	Andhra Valley Power Station (including lake losses).	8.63	9.40	6.98	8.22	6.46	1951-52 to 1960-61 K.G.C.Annexure IV page 14-15 and Annexure VIII page 60. 1961-62 to 68-69 MRDK Vol.V page 44-51.
3.	Mulshi Lake (including lake losses).	30.44	29.10	25.27	28.39	24.29	1951-52 to 1960-61 K.G.C.Annexure IV,pages 16-17 and Annexure VIII,page 62 & 61-62 to 68-69 MRDK Vol.V, page 54-61.
4.	Mutha System Ex.Khadak-wasla (including lake losses).	0.62	3.47	3.82	5.84	6.84	1951-52 to 1960-61 K.G.C.Annexure IV,page 18-21 and Annexure VIII, page 64. 1961-62 to 68-69 MRDK Vol.V, page 64-71.
5.	Nira System Ex.Vir (including lake losses).	39.38	40.89	41.98	46.34	45.51	1951-52 to 1960-61 K.G.C.Annexure IV,page 24-27 and Annexure VIII, page 77. 1961-62 to 1968-69 MRDK Vol.V, page 86-93. Lake losses at Bhatghar are assumed to be average losses given at page 77 of K.G.C. Annexure VIII.

contd.....

Sr. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
6.	Ghod Dam Project (Including lake losses)	-	-	-	-	-	-	-	1.36	3.03	2.65	3.00	3.36	3.57
7.	Visapur(Including lake losses)	0.93	0.19	0.24	0.24	0.57	0.67	0.63	0.63	0.58	0.69	0.50	0.50	0.50
8.	Ashti Tank (Including lake losses)	0.82	0.44	0.55	0.58	0.59	0.67	0.82	0.68	0.91	0.86	0.70	0.70	0.70
9.	Ekruk tank (Including Sholapur Water Supply).	2.38	2.29	2.21	2.13	2.03	1.98	2.03	2.22	2.18	2.16	2.10	2.10	2.10

Sr. No.	Name of Project	64-65	65-66	66-67	67-68	68-69	Remarks
6.	Ghod Dam Project (including lake losses)	3.21	4.85	6.07	8.31	8.93	From 1958-59 to 60-61 withdrawals have been worked out from area irrigated given at page 50 of Annexure IX with Average duty of 7.4 acres/Mcft. ($\frac{62.4}{8.43}$ = 7.4). Losses given at page 45 of Annexure IX. Losses are proportionately assumed. Withdrawals for 61-62 and 62-63 are assumed. For years 63-64 to 68-69 withdrawals and losses are as given in MRDK Vol.V pages 77-82.
7.	Visapur (including lake losses).	0.50	0.50	0.50	0.50	0.50	1951-52 to 1960-61 withdrawals are as per K.G.C.Annexure IV, page 22-23 and losses as given at page 72 of K.G.C. Annexure VIII. From 1961-62 to 1968-69 withdrawals are as given in Annexure VIII page 74.
8.	Ashti Tank (including lake losses).	0.70	0.70	0.70	0.70	0.70	1951-52 to 1960-61 withdrawals are taken from K.G.C.Annexure IV page 30-31 and losses from Annexure VIII page 90. From 1961-62 to 1968-69 withdrawals are taken from Annexure VIII page 92.
9.	Ekruk tank (including Sholapur Water supply).	2.10	2.10	2.10	2.10	2.10	Withdrawals are taken from 1951-52 to 1960-61 K.G.C.Annexure IV 32-33 pages and losses as given in Annexure VIII page 102. 1961-62 to 1968-69 withdrawals are taken as average from Annexure VIII page 104. Sholapur water supply - see K.G.C.Annexure VIII page 106.

contd.....

Sr. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
10.	Mhaswad Tank (Including lake losses)	2.89	1.54	1.84	1.40	1.81	2.72	2.86	2.06	2.61	2.79	2.20	2.20	2.20
11.	Mangi Tank (Including lake losses)	-	-	-	-	-	-	0.36	0.44	0.60	0.45	0.75	0.90	1.10
12.	Khasapur Tank (Including lake losses)	-	-	-	0.40	0.50	0.60	0.70	0.80	0.86	0.92 / ~~0.99~~	1.02	1.30	1.30
13.	Kurnoor Project (Including lake losses)	-	-	-	-	-	-	-	-	-	-	-	-	-
14.	Krishna Canals Ex-Khodshi (Including lake losses)	1.46	1.31	1.05	1.12	0.90	0.16	0.41	1.83	2.49	3.02	3.19	2.81	4.20
15.	Koyna Hydro Electric Project (Including lake losses)	-	-	-	-	-	-	-	-	-	-	1.43	6.43	49.38
16.	Radhanagari Project (Including lake losses)	-	-	-	4.26	4.63	7.15	9.78	10.85	11.02	11.96	12.25	10.73	7.12
Total:-		85.29	85.94	91.60	94.92	~~96.80~~ 97.30	102.70	102.26	106.55	115.81	112.00	124.18	117.14	~~162.00~~ 162.0

(34)

Sr. No.	Name of Project	64-65	65-66	66-67	67-68	68-69	Remarks.
10.	Mhaswad Tank (Including lake losses)	2.20	2.20	2.20	2.20	2.20	Withdrawals for period 1951-52 to 1960-61 as per K.G.C.Annexure IV pages 28-29 and Losses from Annexure VIII, page 95. Withdrawals 1961-62 to 1968-69 as average as given in K.G.C. Annexure VIII page 95.
11.	Mangi Tank (Including lake losses)	1.10	1.10	1.10	1.10	1.10	Withdrawals for period between 57-58 to 60-61 K.G.C.Annexure IV pages 228-236. For period 1961-62 to 1968-69. Average withdrawals as given in Annexure IX, page 55-58. Development for 61-62 to 63-64 is assumed.
12.	Khasapur Tank (Including lake losses)	1.30	1.30	1.30	1.30	1.30	The development from year 1954-55 to 1962-63 including losses is assumed and further upto 1968-69 average withdrawal including losses (1.30 T.M.C.) is taken from Annexure IX, page 59-62.
13.	Kurnoor Project (Including lake losses)	-	-	-	0.30	0.60	For 67-68 to 68-69 development is assumed.
14.	Krishna Canals Ex-Khodshi (Including lake losses)	2.92	2.74	2.36	1.53	1.87	For withdrawals between 1951-52 to 1960-61 K.G.C.Annexurx IV page 2-3 and for 61-62 to 68-69 MRDK Vol.V, pages 2 to 9.
15.	Koyna Hydro-electric Project (Including lake losses)	57.29	55.30	90.09	92.57	88.85	For years from 61-62 to 68-69 withdrawals & lake losses are taken from MRDK Vol.V, pages 13- to 20.
16.	Radhanagari Project (Including lake losses)	9.08	7.86	6.00	6.11	6.65	For period between 1954-55 to 60-61 K.G.C. Annexure IV page 8-9. Annexure X page 39, (for losses) and for 1961-62 to 68-69, MRDK Vol.V, page 23-30.
Total:-		166.63	168.12	195.42	211.43	204.16	

Statement No.2

Yearwise utilization for Major & medium Projects in Mysore State as agreed during discussions of Engineers of Maharashtra-Mysore-Andhra Pradesh on 29 & 30 of July'71

Sl. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61
1.	Ghataprabha Stage I & II including Gokak Canals.	2.06	1.82	2.14	3.43	4.31	4.63	4.67	5.68	8.29	7.39
2.	Bhadra Anicut	3.42	3.82	3.54	3.21	3.14	3.44	3.99	3.96	4.49	4.49
3.	Tunga Anicut	-	-	-	-	3.01	3.01	7.19	7.19	7.19	7.19
4.	Ambligola (including losses)	-	-	-	-	-	-	-	-	-	-
5.	Anjanampur Reservoir (including losses)	2.59	2.60	2.61	2.61	2.62	2.63	2.64	2.64	2.65	2.65
6.	Dharma Canal System Dharma Project (including losses from 64-65).	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
7.	Tungabhadra Dam -										
	(a) Right Bank Low Level Canal.	-	-	3.60	3.81	6.16	8.55	11.98	12.40	13.50	13.82
	(b) Right Bank high Level Canal.	-	-	-	-	-	-	-	-	-	-

Contd..

Statement-2

Sl. No.	Name of Project.	61-62	62-63	63-64	64-65	65-66	66-67	67-68	68-69	Remarks
1.	Ghataprabha Stage I & II including Cokak Canals.	7.09	8.34	7.86	8.31	8.41	9.71	10.46	17.69	
2.	Bhadra Anicut.	5.49	6.01	6.37	6.73	7.21	6.20	6.71	7.24	
3.	Tunga Anicut	6.15	8.24	8.31	8.86	9.95	11.62	11.11	11.39	
4.	Ambligola (including losses)	-	1.40	1.40	1.40	1.40	1.40	1.40	1.40	
5.	Anjanapur Reservoir (including losses)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
6.	Dharma Canal System Dharma Project (including losses from 64-65)	1.40	1.40	1.40	2.20	2.20	2.20	2.20	2.20	
7.	Tungabhadra Dam									
	(a) Right Bank Low Level Canal	16.75	18.27	16.42	17.16	16.12	16.32	15.63	14.67	
	(b) Right Bank High Level Canal	-	-	-	-	-	-	0.25	1.43	

Sr. No.	Name of Project	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61
8.	Vani Vilas Sagar (including lake losses)	6.18	6.01	7.50	6.12	7.75	7.97	8.82	9.55	11.06	10.68
9.	Rajolibanda Diversion Scheme.	-	-	-	-	-	-	-	0.60	0.60	0.60
10.	Vijayanagar Channels	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71
	Total of Agreed Projects	21.36	21.36	26.50	26.29	34.10	37.34	46.40	49.13	54.89	53.93

Contd. 4....

Sr.No.	Name of Project	1961-62	1962-63	63-64	64-65	65-66	66-67	67-68	68-69
8.	Vani Vilas Sagar (including Lake Losses)	9.78	9.54	10.72	10.33	8.25	8.01	7.28	5.10
9.	Rajolinbanda Diversion Scheme	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
10.	Vijayanagar Channels.	9.64	9.64	9.64	9.64	9.64	9.64	9.64	9.64
	Total of Agreed Projects	60.00	66.54	65.82	68.33	66.88	68.80	68.38	74.46

Yearwise gross utilisations of major and medium projects in Mysore according to Mysore in respect of which Maharashtra agrees but Andhra Pradesh has not agreed.

Sl. No.	Name of Project.	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61
1.	Tungabhadra Left Bank Canal (including lake losses).	-	-	9.0	9.0	9.0	11.97	13.56	15.48	17.62	29.10
2.	Bhadra Reservoir (including lake losses)	-	-	-	-	-	-	5.74	5.74	9.06	9.16
	Total of 1 & 2	-	-	9.0	9.0	9.0	11.97	19.30	21.22	26.68	38.26
	Grand Total.	21.36	21.36	35.50	35.29	43.10	49.31	65.70	70.35	81.57	92.19

Contd..

Sr. No.	Name of Projects	61-62	62-63	63-64	64-65	65-66	66-67	67-68	68-69	Remarks.
1.	Tungabhadra Left Bank Canal (including lake losses)	20.10	14.82	19.53	21.00	25.90	54.70	59.50	59.50	Pro-rata based on 92.30 TMC for 5,80,000 [illegible] plus 9 TMC for evaporation losses.
2.	Bhadra Reservoir (including lake losses)	9.55	11.19	16.63	18.67	73.15	42.37	60.23	68.89	Pro-rata based on 57 TMC for 2,44,683 acres plus 4.7 TMC for evaporation losses.
	Total of 1 & 2	29.65	26.01	36.16	39.67	63.05	97.07	119.73	128.39	
	Grand Total	89.65	92.55	101.98	108.00	129.93	165.87	188.11	202.85	

STATEMENT No.3

Krishna Basin yearwise gross utilisations for Major and Medium Projects in Andhra Pradesh for the period 1951-52 to 1968-69 as discussed and agreed in the meeting of Engineers on 29-7-1971 and 30-7-1971.

S.No.	Name of Project.	51-52	52-53	53-54	54-55	55-56	56-57	57-68	58-59	59-60	60-61	61-62	62-63	63-64
		(Utilisation in TMcft)												
1.	Muniyeru (1898-99)	2.94	2.28	3.07	3.29	3.75	3.13	3.20	3.58	4.58	3.33	4.39	4.70	4.66
2.	Dindi Project (1943)	3.14	4.08	3.38	4.02	4.71	3.32	3.64	3.39	3.64	3.52	4.10	3.61	3.41
3.	Pakhal lake (1922)	2.53	2.53	2.53	2.53	2.05	2.80	2.56	2.94	3.03	2.64	2.60	2.60	2.60
4.	Palair Project (1926)	4.10	1.72	3.37	4.51	4.56	4.85	4.47	5.19	4.05	2.69	3.99	4.06	3.31
5.	Wyra Project (1930)	4.76	1.36	3.84	4.24	4.41	3.86	3.88	3.73	4.44	2.62	4.08	3.66	4.02

(Continued)

Note:- Krishna Delta utilisation are not given as they are given along with anicut discharges at Vijayawada.

(Andhra Pradesh continued)

S.No.	Name of Project.	64-65	65-66	66-67	67-68	68-69	Remarks.
1.	Muniyeru. (1898-99)	3.33	2.68	3.72	3.67	2.48	Utilisations for years 51-52 to 60-61 as per page 50-51 of K.G.C. Annexure IV. Actual withdrawals for 61-62 to 68-69 pages 16 to 19 of APDK-Vol.VI (Actual withdrawals).
2.	Dindi Project (1943)	3.90	3.56	3.09	3.26	2.55	Utilisations for years 51-52 to 60-61 as per pages 44-45 of K.G.C. Annexure IV (Actual withdrawals) + Evaporation losses 0.70 TMC. For 61-62 to 68-69 APDK Vol.VI pages 31-34 (actual withdrawals)
3.	Pakhal Lake (1922)	2.60	2.60	2.60	2.60	2.60	1951-52 to 60-61 Actual withdrawals from pages 48-49 of KGC Annexure IV (actual withdrawals). For period 1961-62 to 68-69 agreed utilisation.
4.	Palair Project (1926)	2.19	3.43	1.10	2.79	0.74	For 1951-52 to 60-61 K.G.C. Annexure IV as per page 46-47 + Evaporation losses. For further period vide pages 21 to 24 of APDK Vol.VI
5.	Wyra Project (1930)	2.78	2.86	3.29	3.95	2.56	For 1951-52 to 60-61 K.G.C. Annexure IV pages 52-53 + Evaporation losses 1 TMC. For further period vide pages 26-29 of APDK Vol.VI.

Note:- Krishna Delta utilisation are not given as they are given along with outlet discharges at Vijayawada.

(Continued)

(Andhra Pradesh continued)

S.No.	Name of Project.	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
[redacted]														
6.	Koilsagar Project (1954)	-	-	-	2.78	2.78	2.78	2.78	2.78	2.78	2.78	3.73	3.82	3.09
7.	Tungabhadra Project L.L.C. (1953) Right Bank Canal.	-	-	5.60	5.72	5.65	7.82	8.98	13.55	16.01	21.60	14.61	16.07	15.70
8.	Bhairavanitippa (1958)	-	-	-	-	-	-	-	2.90	2.90	2.90	3.74	4.04	4.73
9.	Musi Project (1957-58)	-	-	-	-	-	-	2.20	2.20	2.20	2.20	1.71	2.94	3.82
10.	Water supply to twin cities.	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
11.	Tungabhadra Project H.L.C. Stage I & II	-	-	-	-	-	-	-	-	-	-	-	-	-
12.	Kotipalli vagu.	-	-	-	-	-	-	-	-	-	-	-	-	-
13.	Vaikuntapuram pumping scheme.	-	-	-	-	-	-	-	-	-	-	-	-	-
14.	Rajolibunda Diversion Scheme. (A.P. share)	-	-	-	-	-	-	-	3.00	3.00	3.00	2.90	4.13	4.53

(Continued)

(Andhra Pradesh continued)

S.No.	Name of Project.	64-65	65-66	66-67	67-68	68-69	Remarks.
6.	Koil sagar Project. (1954)	3.26	2.29	3.00	3.58	1.92	For period 1951-52 to 60-61 prorata utilisation of 9800 acres has been worked out/+ 0.50 TMC losses. For 61-62 to 68-69 prorata of ayacut given in A.P.D.K.. Vol.VII subject to maximum of actual withdrawals. /with
7.	Tungabhadra Project L.L.C. (1953) Right Bank Canal.	15.09	18.53	21.11	19.71	20.03	Prorata utilisation + 5.5 TMC lake losses. For 61-62 to 68-69 prorata of ayacut given in A.P.D.K. Vol.VII subject to maximum of actual withdrawals.
8.	Bhairavanitippa (1958)	4.75	3.01	4.42	3.45	2.06	For 1951-52 to 60-61 prorata utilisation are worked out/+ 0.80 TMC losses. For 61-62 to 68-69 prorata of ayacut given in A.P.D.K. Vol.VII page 29. /with
9.	Musi Project. (1957-58)	4.38	5.31	2.53	5.59	2.78	1957-58 to 60-61 page 36 of K.G.C. Annexure IX. For 1961-62 to 68-69 prorata based on ayacuts given in A.P.D.K. Vol.VII page 28.
10.	Water supply to twin cities.	3.90	3.90	3.90	3.90	3.90	Aggreed utilisations.
11.	Tungabhadra Project H.L.C. Stage I & II.	-	-	3.78	10.66	15.18	Prorata of 32.5 TMC to ayacut.
12.	Kotipalli vagu.	-	-	-	-	1.00	
13.	Vaikuntapuram (Pumping Scheme)	-	2.60	2.60	2.60	2.60	
14.	Rajolibunda Diversion scheme. (A.P. Share)	5.50	5.61	9.05	9.50	9.56	Prorata worked out $\frac{15.9}{87000}$ x Irrigated area For 61-62 to 68-69 Ayacut given APDK VII P.20.

(Continued)

(Andhra Pradesh continued)

S.No.	Name of Project.	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	62-63	63-64
15.	K.C.Canal (actual withdrawals)	33.69	33.43	41.79	29.32	23.92	30.63	38.47	40.56	39.53	60.98	54.56	60.53	66.33
16.	Nagarjunasagar Project													
	(a) Right Bank Canal(including losses)	-	-	-	-	-	-	-	-	-	-	-	-	-
	(b) Left Bank Canal.	-	-	-	-	-	-	-	-	-	-	-	-	-
Total		55.06	49.30	67.48	60.31	55.74	63.09	74.08	87.72	90.06	112.16	104.31	114.06	120.10

(Continued)

(Andhra Pradesh continued)

S.No.	Name of Project.	64-65	65-66	66-67	67-68	68-69	Remarks.
15.	K.C.Canal (Actual withdrawals)	60.41	67.28	68.45	72.68	83.23	Page 39 of K.G.C. Annexure IV. Page 8-11 of APDK Vol.VI.
16.	Nagarjunasagar Project.						
	(a) Right Bank Canal (including losses)	-	-	8.00	85.11	130.56	Page 9 and 10 of A.P.D.K. Vol.VII.
	(b) Left Canal.	-	-	-	10.82	30.90	Prorata of ayacut of 0.714 thousand acres and 2.06 thousand acres.
Total		112.09	123.68	140.64	243.87	314.65	

Krishna Basin yearwise gross utilizations of Major and Medium Projects in Mysore for the period 1951-52 to 1968-69 according to Andhra Pradesh in respect of which there is no agreement between 16 Basin:

S.No.	Name of Project.	1951-1952.	1952-1953.	1953-1954.	1954-1955.	1955-1956.	1956-1957.	1957-1958.	1958-1959.	1959-1960.	1960-1961.	Remarks.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1.	Bhadra Reservoir.	..	..	..	..	..	..	5.74	5.74	7.96	8.16	Based on prorata from the figures given on page 6 MYDK XIII over the proposed ayacut of 2,44,663 and withdrawals of 48.6 TMC. plus evaporation losses of 4.9 TMC., subject to maximum of actual withdrawals.
2.	Tungabhadra Project Left Bank Low Level Canal..	..	..	9.0	9.0	9.0	10.83	11.82	13.00	14.32	20.52 /actual	Based on prorata from the figures given on Page 26 of K.G.C. Annex.IX over the proposed ayacut of 5,80,000 acres and utilisation of 56 TMC. plus 9 TMC. losses subject to maximum of/withdrawals.

(Continued)

Mysore Contd..

S.No.	Name of Project.	1961-1962.	1962-1963.	1963-1964.	1964-1965.	1965-1966.	1966-1967.	1967-1968.	1968-1969.	Remarks.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	Bhadra Reservoir..	8.69	10.03	14.50	16.00	33.32	42.37	60.23	68.89	On prorata basis from the figures of areas given on page 33 of MYDK Vol.X(i) and adding evaporation losses 4.90 TMC. and 46.60 TMC. for diversion.
2.	Tungabhadra Project Left Bank Low Level Canal..	15.75	12.59	15.38	16.29	19.15	36.73	39.59	39.52	On prorata basis for the figures of areas given on page 28 of MYDK Vol.X(i) and adding evaporation losses of 9 TMC. and 56 TMCFT. for diversion.

Sl.No. 12.

(23)

GOVERNMENT OF MYSORE

No. PWD 77 BRA 70

MYSORE GOVERNMENT SECRETARIAT,
VIDHANA SOUDHA,

Dated, Bangalore, 18th August 1971.

FROM

Secretary to the Government of Mysore,
Public Works & Elecy. Department.

To.

The Chief Engineer,
Water Resources Development Organisation,
Ananda Rao Circle, Bangalore.

Sir,

Sub:- Krishna Water Disputes Tribunal - Tendering of evidence by Sri D.Doddaiah, former Director, Mysore Engineering Research Station K.R.Sagar.

I am directed to forward herewith a copy of telegram dated 11th August 1971 received from the Central Board of Irrigation and Power New-Delhi permitting Sri D.Doddaiah, for tendering evidence before the Tribunal, on the above subject, for your information.

Yours faithfully,

19/8/71

(S.K.Mohan)
Under Secretary to Government,
P.W.D.(Technical).

COPY OF TELEGRAM DATED 11-8-1971 FROM XXXXXX CENTRAL BOARD OF IRRIGATION AND POWER ADDRESSED TO THE ADDITIONAL SECRETARY TO GOVERNMENT PUBLIC WORKS AND ELECTRICITY DEPARTMENT BANGALORE.

XXXXX

REULET TWENTYSECOND JULY ADDRESSED TO SHRI MAHAPATRA STOP HAVE INFORMED DODDIAH APPROVAL FOR TENDERING EVIDENCE AS DESIRED STOP MYSORE GOVERNMENT TO PAY TRAVELLING AND DAILY ALLOWANCES== KAPILA CENBIP

COPY

12/8/71

C. No. _____ Sl. No 11. INDIAN POSTS AND TELEGRAPHS DEPARTMENT (21)

Date Stamp

Time of Receipt _____

From _____

By _____

The sequence of entries at the begining of this telegram is—class of telegram, time handed in, serial number, office of origin, date, service instructions (if any) and number of words.

This form must accompany any enquiry respecting this telegram.

SECOND FOLD

TELEGRAM

Address

Dated 17/8 11AM

Gv 150

IFTEKHAR AHMED ADDITIONAL

SECRETARY PUBLIC WORKS AND

ELECTRICTY DEPARTMENT VIDHANA

SOUDHA BANGALORE

FIRST FOLD

X 1815 DA 1147 NEW DELHI 11 STE 43

-- REULET TWENTYSECOND JULY ADDRESSED TO SHRI MAHAPATRA STOP HAVE INFORMED DODDIAH APPROVAL FOR TENDERING EVIDENCE AS DESIRED STOP MYSORE GOVERNMENT TO PAY TRAVELLING AND DAILY ALLOWANCES-- + KAPILA CENBIP

Addl. Secy., PWD
No. 1674 Date 16/8

Secy. PWD.
500 Date 16.8

[redacted] (Gl. Legn).
[redacted]3828 [redacted] 18.8.71.

For perusal.
13/8/71

Secy IW&E
16/8

DSI (for W.a.) U.S(T)

T 1691 [redacted] 17/8

17/8/71

GI
18/8

(S 3/3) (19A) dt. 27-7-67—1,25,000 Bks.

PROCEEDINGS OF THE GOVERNMENT OF MYSORE
(PUBLIC WORKS & ELECTRICITY DEPT)

***

Sub:- Appointment of Sri D.Doddaiah, Adviser, C.B.I & P. as consultant to Government of Mysore.

***

ORDER NO.PWD 299 SPG 71, BANGALORE, DATED, 21st JULY 1971.

With reference to letter No.WRD/PA/1/Con/71 dated 25-6-71 from the Director, Water Resources Development Organisation, Bangalore on the above subject, Sri D.Doddaiah, Adviser, Central Board of Irrigation and Power is appointed as Consultant to Government of Mysore, Public Works and Electricity Department. The terms and conditions shall be as below:

Period of Appointment:- 6 months in the first instance terminable earlier at the discretion of either party.

Duties: - To advise on problems connected with Hydraulic model studies and Irrigation.

Fees:- Sri D.Doddaiah, shall be paid a total fee of Rs.150/- (Rs. One hundred and fifty only) for each day of Consultations including study and examination of concerned documents subject to proviso that the total fee received during the period of six months shall not exceed Rs.3000/- (Rs. Three thousand only). He will also be eligible for travelling allowance for journeys in connection with the consultants as admissible as per rules. - He is also permitted to travel by Air. In case of Train Journey, he will be entitled to travel by air conditioned class.

Accommodation:- He shall be entitled to suitable accommodation as in the case of Grade I Gazetted Officers on duty.

Headquarters:- Bangalore will be the Headquarters in connection with work.

The expenditure relating to this will be debited to the Head of account "19. General Administration - C.j. I - Mysore Government Secretariat - 8- Expenditure connected with the Committees, Tribunals, Conferences etc."

This order issues with the concurrence of Finance Department vide U.O.Note No.FD 274 Int.W-1/71 dated 10-7-71.

BY ORDER AND IN THE NAME OF THE
PRESIDENT OF INDIA,

(C.R. SUBBA RAO),
Under Secretary to Government,
P.W. & E. Dept.(Services-A&B)

To:
The Accountant General, Mysore, Bangalore.
All Chief Engineers.
The Director, Water Resources Development Organisation, B'lore.
Sri D.Doddaiah, Adviser, C.B.I & P., Bangalore.
The P.A. to the Secretary, P.W.D.
The P.A. to the Additional Secretary, P.W.D.
All Deputy Secretaries, P.W. & E. Dept.
The G.A.D.(Services).

ara/21.

IMMEDIATE/EXPRESS DELIVERY. GOVERNMENT OF MYSORE

No. PWD.77.BRA.70.

MYSORE GOVERNMENT SECRETARIAT,
VIDHANA SOUDHA,
Dated, Bangalore, 3rd August 1971.

FROM

The *Secretary to the Government of Mysore*
Public Works & Electricity Department.

To

The Secretary,
Tungabhadra Board, Tungabhadra Dam,
Via Hospet.

Sir,

Subject: Krishna Godavari Water Disputes - furnishing of certain particulars.

-:-

I am directed to request you to kindly furnish a detailed note on the method adopted for calculation of discharges(inflow, outflow and withdrawals) at the Tungabhadra Dam. The coefficients of discharge adopted for the calculation of flow through the various sluices and spillway may please be indicated. Whether these coefficients are based on model studies may also be indicated.

An early action in the matter may kindly be taken.

Yours faithfully,

sd/-
(S.K.Mohan),
Under Secretary to Government,
P.W.D.(Technical).

svds/iii.

Copy to the Chief Engineer, Water Resources Development Organisation, Bangalore with reference to telex message No. 460/71, dated 2-8-1971.

O/C

Under Secretary to Government,
P.W.D.(Technical).

SLNO 9.

Immediate / Express Delivery

No. PWD 77 BRA 70.

To. The Secretary,
Tungabhadra Board, ... T.B. Board
Via. Hospet. ~~Munirabad~~.

Sir,

Sub:- Krishna Godavari waters Disputes -
Furnishing of certain particulars.

I am directed to request you to kindly furnish a detailed note on the method adopted for Calculation of discharges (inflow, outflow and withdrawals) at the Tungabhadra Dam. The ~~including~~ Coefficients of discharge adopted for the calculation ~~The Results of model Studies, if any, to give~~ the Coefficients of ~~Discharge~~ as also the chart ~~of flows through the various sluices and spillway~~ may please be indicated. Whether the ~~formulae~~ adopted in the calculations. Coefficients are based on model studies may also be indicated.

An early action in the matter may kindly be taken.

Y. f.

U.S.
PWD (T).

Copy to the CE WRDO. Bangalore w.r.t. Telex message No. 460/71 dt. 2.8.71.

SL.NO. 8.

(17)

PWD (Gl. Irrgn).
3510 Date 2-8-71

CHIFSEC BG 239
SPLCOM ND-593
NEW DELHI DATED 2.8.8..71 MESSAGE NO.460/71

NO.MD/463/TLX/71.
Conveyed.nlh2871

FROM SPLCOM MYSORE NEW DELHI TO CHIEFSEC BANGALORE
(MESSAGE FROM W.R.D.O. CAMP NEW DELHI
XXXXXXXXXXXX ''S.K.MOHAN, UNDER SECRETARY,P.W.D. VIDHAN SHO..
SOUDHA BANGALORE
THROUGH SPECIAL COMMISSIONER FOR MYSORE NEW DELHI
''ADDRESS SECRETARY TUNGABA....TUNGABHADRA BOARD OF..FOR
A DETAKED NOTE ON THE METHOD OF CALCULATION OF DISCHARGES(INFLOW,
OUTFLOW AND WITHDRAWSL) AT TUNGABHADRA DAM NOTE TO INCLUDE THE RESULTS
OF MODEL STUDIES, IF ANY, TO FIX THE COEFFICIENTS OF DISCHARGE AS
ALSO THE EXACT FORMULAE ADOPE..ADOPTED IN THE CALUCATIONS STOP''

CHIFSEC BG 239 /PLACK/MESSAGE OVER W.M.TKS/BLD/1.18PM

CHIFSEC BG 239

SPECOM ND-593

SPLCOM ND-593

NEW DELHI DATED 21.-22.7.71 MESSAGE NO.423/71

FROM CHIEF ENGINEEC, WATER RESOURCE DEVELOPMENT ORGANISATION, CAMP NEW DELHI

THROUGH THE SPECIAL COMMISSIONER, MYSORE NEW DELHI

TO SRI M. CAHNNAA....CHANAPPA, DEPUTY SECRETRAY, P.W.D. BANGALORE

ATTENTION SRI A.V. SHANKARA RAO, EXCUTIVE ENGINEER, W.R.D.O. ANANDARAB CIRCLE BANGALOYE

''ASK SRI R.V. KULKARNI TO OBTAIN A CAOPY OF THE LARGE SIZE SOIL MAP OF MYSORE STATE PREPARED BY THE DEPARTMENT OF AGRICULTURE AND SEND THE SAME WITH SRI B.V.S. RAO OR ANY OTHER PERSON COMING TO NEW DELHI THE C..SCALE OF THE MAP SHOULD BE SPECIFIED STOP ''

---------+

CHIFSEC BG 239 /PLACK/BLD/1.40PM+?ACKED TNKS 2(=/RPT+?

ACKED TNKS 22/7/71 PL++(R

SL.NO.7.

MD/426/TLX/71

16

(Cl. Irrgn)

328/

22.7.71

spoken to Sri. A.V. Shankara Rao. He is aware

22/7/71.

SL NO 6

(15)

CHIFSEC BG 239 NO HD / 419/ TLX 71

SPLCOM ND-593

NEW DELHI DATED 19.7.71 MESSAGE NO.417/71

FROM SPLCOM MYSORE NEW DELHI TO CHIEFSEC BANGALORE
(MESSAGE FROM SRI MOHAN., UNDER SECRETARY, TO CHANNAPPA,
DEPUTY SECRETARY, PUBLIC WORKS DEPARTMENT., VIDHANS SOUHD,,,
SOUDHA, BANGALORE)

''PLEASE SEND URGETN...URGENTLY MYSORE STATE STATISTICAL ABSTACTS PUBLISHED ~~X&X~~ PUBLICATIONS FOR THE PERIOD 196....1956-57 TO 1967-68.., W..SHOWING DISTRICTWISE ARES IRRIGATED SOURCE WISE STOP SHANKAR RAO MAY BE ASKED TO SEND IT WITH B.V.S. RAO, DEPUTY DIRECTOR, STATISTICS TOMORROW ITSELF STOP VERY URGENT STOP ''

-----MOHAN----

CHIFSEC BG 239 /PLACK?/BLD/7.30PM

CHIFSEC BG 239 ACKED TNKSPL+?/ NO MESPL+?/RT

Received at 8-35 PM 19/7/71

8-40 P.M. Sri. Shankara Rao was informed over phone of the above.

19/7/71

PWD 3221/S1/71

CHIEFSEC BG 239 SLNO 5 (14)

SPLCOM ND-593 NO.HD 423 TLX 71.

NEW DELHI DATED 20.7.71 MESAGE NO.421/71 3229/G1/71 20/7/71

FROM SPLCOM ::

(TELEX MESSAGE FROM CHIEF ENINGE...ENGINEER, W.R.D.O. CAMP NEW DELHI THROUGH THE SPLCOM MYSORE FOR MYSORE , MYSORE BHAVAN, NEW DELHI TO SRI M. CA..CHANNAPPA, DEPUTY SECRETARY,P.W.D. BANGALORE ::ATTENTION SRI K.V. RAJALAKSHMIAH, SETTY SUPERINTENDING ENGINEER, C.P. AND I. W.R.D.O. BANGALORE

'' REFER TELE MESSAGE SENT YESTERDAY STOP PLEASE SEND WITH SRI B.V.S. RAO, PUBLISHED YEARLY STATISTICAL ABSTRACTS, SEASON AND CROP REPORTSNAND ADMINISTRATION REPORTS OF MYSORE FOR THE PERIODS FROX 1941 ONWARDS UPTO DATE AVAILABLE STOP THIS IS REQUIRED FOR WORKING OUT IRRIGATION PARTICULARS UNDER MINOR T..IRRIGATION WORKS STOP''

G. J Lobo 20/7/71

I have informed Sri Venkatarao of his office of W.R.D.

CHIFSEC BG 239 /PLACK/BLD/FOUR MESSAGE PL/1.57PM

CHIFSEC BG 239 NO..418 TO 421 TIME FROM 1.45 TO 1.57PM ACKED TNKS

VO NO MESPL+2/ OK TKS

GOVERNMENT OF MYSORE.

IFTHEKAR AHMED,
Additional Secretary to Government,
Public Works & Elecy., Department.

Mysore Government Secretariat,
"Vidhana Soudha",
Bangalore, dated: 2 July, '71.

D.O. No.PWD 77 BRA 70.

Dear Shri. Mohapatra,

Subject: Krishna Godavari Waters Disputes Tribunals - Tendering of evidence by Sri.D. Doddaiah, former Director, Mysore Engineering Research Station K.R. Sagar.

- - -

Please refer to this State Government letter No.PWD 77 BRA 70 (Suppl) dated 16.4.1971 and subsequent reminder dated 27.5.1971 on the above subject, I request you to kindly look into this and accord early approval for tendering of evidence by Sri. D. Doddaiah, Adviser, Central Board of Irrigation and Power, before the Krishna Waters Disputes Tribunals at an early date.

Yours Sincerely,

Ifthekar ahmed

To

Shri. T.C. Mahapatra
Chairman,
Central Board of Irrigation
and Power, Curzon Road,
New Delhi.

ISSUED
Dated 2.7.71

S*/15.7.

Sl NO. 9

GOVERNMENT OF MYSORE.

IFTHEKAR AHMED,
Additional Secretary to Government,
Public Works & Elecy., Department.

Mysore Government Secretariat,
"Vidhana Soudha",
Bangalore, dated: July, '71.

D.O. No.PWD 77 BRA 70.

Dear Shri.

Subject: Krishna Godavari Waters Disputes Tribunals - Tendering of evidence by Sri.D. Doddaiah, former Director, Mysore Engineering Research Station K.R. Sagar.

- - -

Please refer to this State Government letter No.PWD 77 BRA 70 (Suppl) dated 16.4.1971 and subsequent reminder dated 27.5.1971 on the above subject, I request you to kindly look into this and accord early approval for tendering of evidence by Sri. D. Doddaiah, Adviser, Central Board of Irrigation and Power, before the Krishna Waters Disputes Tribunals at an early date.

Yours Sincerely,

15/7/71

To

Shri. T.C. Mahapatra
Chairman,
Central Board of Irrigation
and Power, Curzon Road
New Delhi.

S*/15.7.

Sl. NO. 4. (11)

NO. PWD 77 BRA 70.

To

~~The Chairman~~
~~Central Water & Power Commission~~ New Delhi.

Sir,

Sub:— Krishna Godavari waters disputes Tribunals —
Tendering of evidence by Sri D. Doddaiah, former
Director, Mysore Engineering Research Station K.R. Sagar.

Dear Sir...

Please refer to this State Govt. letter NO. PWD 77 BRA 70 (Suppl) dated 16-4-1971 and subsequent reminder dated 27-5-1971 on the above subject. ~~I am directed to invite reference~~ I request you to kindly ~~to accord approval~~ arrange for tendering of evidence by Sri D. Doddaiah, Adviser Central Board of Irrigation and Power, before the Krishna waters disputes Tribunals at an early date.

Yours ~~faithfully~~ obediently,

13/7/71

Sir.....

Chairman

CWC IP

New Delhi

(AS)

~~Under Secretary~~

8/7/71.

Sl.No.3. (10)

GOVERNMENT OF MYSORE

No.PWD 77 BRA 70/III.

MYSORE GOVERNMENT SECRETARIAT,
VIDHANA SOUDHA,
Dated, Bangalore, 7 July, 1971.

FROM

The *Secretary to the Government of Mysore*
Public Works & Elecy., Department.

To

The Director,
Water Resources Development Organisation,
Bangalore.

Sir,

Subject: protection to works in Vedavathy Sub-basin under inter-State streams and catchments Agreement between the State of Mysore and Andhra Pradesh.

- - -

With reference to your letter No.WRDO/KGU/AGR, dated 8.6.1971, I am directed to convey the approval of Government of Mysore for the proposed agreement regarding the protection to works, in the States of Mysore and Andhra Pradesh.

Yours faithfully,

O/C

(S.K. Mohan)
Under Secretary to Government,
Public Works & Elecy., Deptt.,

7/7/71

7/7/71

S*/6.7.

SL. NO. 3

(9)

NO. PWD 77 BRA 70 / III

To

The Director,
W.R.D.O. Bangalore.

Sir,

Sub:- Protection to works in Vedavathy Sub-basin under inter-State Streams and Catchments Agreement between the State of Mysore and Andhra Pradesh.

-

With reference to your letter no. WRDO/KGW/AGR dt. 8-6-1971 I am directed to convey the approval of Govt. of Mysore for the proposed agreement regarding the protection to works in the State of Mysore and Andhra Pradesh

yours faithfully,

U.S.
PWD (T).
2/7/71

GOVERNMENT OF MYSORE

No.WRDO/KGU/AGR/

OFFICE OF THE DIRECTOR,
Water Resources Development Organisati
P.B.No.8,
Ananda Rao Circle,
Bangalore-9, dated 8th June, 1971.

8 JUN 1971

To
The Additional Secretary to the Government of Mysore,
Public Works and Electricity Department,
Vidhana Soudha,
Bangalore-1.

Sir,

Sub:- Protection to works in Vedavathy sub-basin under inter-State streams and catchments - Agreement between the States of Mysore and Andhra Pradesh-

---

In the V meeting of the State Level Technical Committee held on 12th and 15th of March 1971, it was decided that Mysore and Andhra Pradesh may come to an agreement without any reference to 1892 agreement imposing restrictions on the construction of new works in the catchment area of the existing tanks in Andhra Pradesh whose catchment area falls in Mysore. Similarly of the tanks existing, if any, in Mysore whose catchment area falls in Andhra Pradesh. The Chief Engineer, Minor Irrigation and Public Health Engineering, was requested to give the details of such works immediately.

The details of works needing protection in Mysore have since been received from the Chief Engineer, Minor Irrigation and Public Health Engineering. In the informal meeting of the engineers of the States of Mysore and Andhra Pradesh held at New Delhi in the 1st week of May 1971, a draft agreement regarding the protection to works in both the States was arrived at. A copy of the draft agreement imposing restrictions on construction of new works in Vedavath sub-basin, together with its two schedules and a map showing the catchment areas and streams on which no new irrigation works are to be constructed, are enclosed herewith. I request early approval of the Government for the said draft agreement.

Yours faithfully,

(B.C. Angadi)
Director.

AGREEMENT

It is agreed between the State of Mysore and State of Andhra Pradesh that the State of Mysore will not put up any new work on the streams mentioned in Schedule (1) within the limits shown in the said Schedule and marked in the map appended herewith, without the consent of Andhra Pradesh to protect the irrigation interests under the existing works in Andhra Pradesh and similarly it is agreed that the State of Andhra Pradesh will not put up any new work on the streams mentioned in Schedule (2) within the limits shown in the said Schedule and marked in the map appended herewith, without the consent of Mysore State to protect the irrigation interests under the existing irrigation works in Mysore State.

It is further agreed between the State of Mysore and the State of Andhra Pradesh that the State of Mysore will not put up any new construction on Suvarnamukhi river so as to affect the supply of Agali tank in Andhra Pradesh for the irrigation of an ayacut of 884 acres.

Having regard to this concession the parties are agreed that the Tribunal need not decide issue No.IV.

....

SCHEDULE 1

LIST OF STREAMS ON WHICH NO NEW CONSTRUCTIONS SHOULD BE UNDERTAKEN BY THE STATE OF MYSORE WITHOUT THE PREVIOUS CONSENT OF ANDHRA PRADESH.

Sl. No.	Name of the stream or catchment.	Location in the Map.	Limits within which no new construction should be under taken by Mysore without the previous consent of Andhra Pradesh.
1.	Hagari (Vedavathy)	A	From Vanivilas Sagar in Mysore upto Bhairavanithippa dam in Andhra Pradesh.
2.	Dodderi tank halla (Garanihalla)	B	4½ miles upstream of confluence with Hagari.
3.	Talak tank halla (Garanihalla)	C	From the Salem - Bellary road bridge over this stream upto confluence with Hagari.
4.	Chinnahagari	D	Upto 16 miles upstream from Mysore - Andhra Pradesh boundary.
5.	Amarapuram tank catchment.	E	Catchment of Amarapuram tank in Mysore State.
6.	Virapasamudram tank catchment.	F	Catchment of Virapasamudram tank in Mysore State.
7.	Yeradkere tank catchment.	G	Catchment of Yeradkere tank in Mysore State.
8.	Rangasamudram tank catchment.	H	Catchment of Rangasamudram tank in Mysore State.
9.	Nagalapuram tank catchment.	I	Catchment of Nagalapuram tank in Mysore State.

SCHEDULE 2

List of streams on which no new construction should be undertaken by the State of Andhra Pradesh, without the previous consent of Mysore.

.....

S.No.	Name of the stream.	Location in the Map.	Limits within which no new construction should be undertaken by A.P without the previous consent of Mysore State.
1	2	3	4
1.	Madalur Doddakere nala	J	Entire catchment of the nala in Andhra Pradesh.
2.	Madalur Gidaganahalli Kattenala	K	-do-
3.	Doddabanagere doddakere nala	L	-do-
4.	Dharmapur tank nala	M	-do-
5.	Parasurampur doddakere nala	N	-do-
6.	Kadehoda Achuvalikere nala	O	-do-
7.	Parasurampura tank nala	P	-do-
8.	Gowripura Palyadakere nala	Q	-do-
9.	Jajur tank nala	R	-do-
10.	Thippareddihally Kyatanakere nala	S	-do-
11.	Oblapur tank nala	T	-do-
12.	Hagari (Vedavathi)	U	Below Bhairavanithippa Dam upto A.P - Mysore border.
13.	Chinnahagari	V	From Mysore-Andhra Pradesh border upto its confluence with Vedavathy (Hagari).

Sl.No. 2.

GOVERNMENT OF MYSORE

MYSORE GOVERNMENT SECRETARIAT,
'VIDHANA SOUDHA'
NO.PWD 77 BRA 70 BANGALORE, DATED 29 MAY, 1971.

From

The Secretary to Government of Mysore,
Public Works & Electricity Department.

To

The Chairman,
Central Board of Irrigation and Power,
NEW - DELHI.

Sir,

Subject:- Krishna Godavari Waters disputes Tribunals Tendering of evidence by Shri D.Doddaiah, former Director Mysore Engineering Research Station K.R.Sagar.

-.-

I am directed to invite reference to this State Government letter No. PWD 77 BRA 70 Suppl. dated 16-4-1971 on the above subject and to request you kindly to accord approval for tendering of evidence by Sri D.Doddaiah, Adviser, Central Board of Irrigation and Power, before the Krishna waters disputes Tribunal at an early date.

Issued
Dated 27/5

Yours faithfully,

O/C

(S. K. MOHAN),
Under Secretary to Government,
Public Works & Elecy.Department.

26/5/71.

-.-

A*/- 26.5.

NO. PWD 77 BRA 70.

To
The Chairman,
Central Board of Irrigation and Power,
New Delhi

Sir,

Sub:— Krishna Godavari waters disputes Tribunals —
Tendering of evidence by Sri D. Doddaiah, former
Director, Mysore Engineering Research Station
K.R. Sagar.

— · —

I am directed to invite reference to this State Govt letter no. PWD 77 BRA 70 Suppl. dt. 16-4-1971 on the above subject and to request you kindly to accord approval for tendering of evidence by Sri D. Doddaiah, Adviser, Central Board of Irrgn & Power, before the Krishna waters Disputes Tribunal. ~~on behalf of the Govt of Mysore~~, at an early date.

Yours faithfully,

US
PWD (T).
24/5/71.

Sl No.1-

GOVERNMENT OF MYSORE

No.PWD 77 BRA 70 Suppl.

Mysore Government Secretariat,
Vidhana Soudha,
Dated, Bangalore 16th April 1971.

From
The Secretary to the Government of Mysore,
Public Works & Elecy. Department.

To
The Chairman,
Central Board of Irrigation and Power,
New-Delhi.

Sub:- Krishna Waters Disputes Tribunal -
Tendering of evidence by Sri D.Doddaiah,
former Director, Mysore Engineering Research
Station, K.R.Sagar.

.....

I am directed to state that Shri D.Doddaiah, former Director, Mysore Engineering Research Station, K.R.Sagar presently Adviser, Central Board of Irrigation and Power had been throughout associated as Mysore State representative on the model studies of Vijayawada Anicut conducted at Central Water Power Research Station, Poona. The State of Mysore has filed, before the Krishna Water Disputes Tribunal, a list of subjects on which evidence is going to be led. One of the subjects is the model studies conducted at the Central Water and Power Research Station, Poona on the Vijayawada Anicut. Having been the Director of the Reasearch Station, Mysore Engineering Research Station, K.R.Sagar, and having been associated with the model studies it is desired by this Government that Shri D.Doddaiah tenders evidence on the model studdes before the Tribunal.

I am therefore to request you to kindly accord approval for his tendering evidence before the Krishna Waters Disputes Tribunal on behalf of the Government of Mysore on the subject of model studies relating to Vijayawada ~~xxx~~ Anicut conducted at the Central Water and Power Research Station, Poona. The actual dates when Shri D.Doddaiah, will be required to appear before the Tribunal will be intimated to him after finalisation of the list by the Tribunal.

Yours faithfully,

Sd/-(S.K.Mohan)
Under Secretary to Government,
Public Works & Elecy. Department.

1.Copy to the Director,Water Resources Development Organisation, Bangalore for information.

2.Copy to Shri D.Doddaiah, Adviser Central Board of Irrigation and Power, 589 Upper Palace Orchards, Bangalore-6.

Sd/- K.P.Kapoor
Under Secretary to Govt.
P.W.& L.Department.

Copy

Original letter at page 401
in file no. PWD 77 BRA 70 volume-II

Rules defining the limits within which no New Irrigation Works are to be constructed by the Mysore State without previous reference to the Madras Government.

EXPLANATORY MEMORANDUM

To accompany the Draft of "Rules defining the limits within which no New Irrigation Works are to be constructed by the Mysore State without previous reference to the Madras Government."

I. It was mutually agreed at the Conference held at Ootacamund on Friday, 22nd May 1891, that the proposal of Mysore to consider each individual Stream, or Catchment area, separately on its own merits, would be a more suitable method of arriving at an arrangement whereby both Madras and Mysore interests should be protected.

II. With this view, the accompanying Draft of Rules and appended Schedules have been prepared after very careful consideration. Special pains have been taken to exclude from Mysore operations all Streams and Catchment areas which can reasonably be regarded as affecting existing Madras interests to any extent whatsoever.

III. The general principle of the Draft Rules now proposed is the same as that of the Rules recently drawn up in the Madras Public Works Department. The Mysore programme of Public Works will be seriously curtailed by the adoption of even the Rules now proposed, but the Durbar are most anxious to have some immediate settlement on the subject in order to be able to revise their programme and to have some projects ready to hand against an adverse season, which unfortunately is already threatening. Mysore operations outside the limits of Schedules A and B cannot, it is believed, affect existing Madras works, nor can such works which depend upon floods in the streams supplying them, be affected by direct Irrigation in Mysore, from channels drawn from such Streams by means of anikats.

IV. In order to further illustrate the scope of these Rules, and the exhaustive character of the list of Streams included in Schedule B, the following remarks on each of the Main River Drainages entered in Schedule A are offered :—

(1) *Tungabhadra Drainage.*—On this drainage there are only two Streams on which there are any existing Madras works, if the anikats on the Tungabhadra are left out of account as being almost entirely dependent on floods in the river; these are—

(i) The Jiganhalli Tank Catchment.
(ii) The Anantapur Tank Catchment.

These Catchments extend into the Molakalmuru Taluk of Mysore, and have been entirely excluded from Mysore Operations—(items Nos. 9 and 10 of Schedule B).

As regards the Madras works on the Tungabhadra itself, the nearest of these to the frontier is, it is believed, the Walvapur Anikat in the Hospet Taluk, some 87 miles below the Frontier measured down the Stream, and below this there are several other existing anikats with their subsidiary works.

These anikats are entirely dependent on floods in the River, and these floods are caused by the run-off from the Malnad (or Western Ghat) portions of the Catchment in the upper reaches of the Tunga and Bhadra Rivers above Shimoga and Lakvalli, where the rain fall over large areas is from 150 to 250 inches during the South-West Monsoon. The scanty and intermittent supply received by the River (Tungabhadra) from the smaller drainages in the dry tracts below Shimoga and Lakvalli does not materially affect the floods; this scanty supply is of no practical benefit to Madras works, as they chiefly occur (if ever) in November or later in the year, but are of incalculable benefit to Mysore in the arid tracts of Chitaldrug.

(2) *Vedavati or Hagari Drainage.*—Taking the minor drainages of this Catchment in order, these are—

(11) Chinna Hagari.
(12) Nagalapura Tank (Madras) Catchment.
(13) Rangasamudram Tank (Madras) Catchment.
(14) Yeradkere Tank (Madras) Catchment.
(15) Main stream of Talak drainage.
(16) Main stream of Doderi drainage.
(17) Virapsamudram and Amrapur Tank (Madras) Catchments.

Nos. (12), (13), (14), (17) affect supply to existing Madras Tanks, and the entire areas of these Catchments are included in Schedule B. It is believed these are the only Catchments on this drainage (Vedavati) flowing out of Mysore Territory on which there are existing tanks below in Madras Territory.

The other three Streams in Schedule B, in addition to the main Stream in Schedule A, are the main feeders of the river, and Mysore opperations up to the points noted in the Schedule have been restricted to Repair Works. In this Catchment again the larger proportion of the floods in the river from June to October are due to the heavy rainfall in the upper reaches of the river, and the run-off from the Catchments in the dry and arid portions of the Catchment near the Frontier is of little use in supplying the anikats on the river (if any such exist) in Madras Territory; floods on these small Catchments are generally experienced in the end of October or in November, and even then are of comparatively rare occurrence, and of short duration.

(3) *Pennar or North Pinakini Drainage.*—Attention may be drawn to Colonel Smalley's remark in para 19 of his No. 674, dated 10th June 1890. There are no existing Madras Works on this river for a distance of 200 miles or so from the Frontier (as measured down the stream); there are, however, some five tanks near Hindupur which receive a supply from channels with Open Heads from the river; presumably these tanks would only receive a supply in times of floods in the river.

It will however be seen that in addition to the main Stream in Schedule A, Mysore has consented to restrict its operations on the whole length of two of the principal feeders as well as on considerable lengths on the Kumadvati and Jayamangali Rivers. The whole of such Catchment areas in Mysore Territory as directly affect the supply to tanks in Madras have been also excluded from Mysore operations.

(4) *Chitravati River Drainage.*—In addition to the main Stream, the lower portion of the main feeder (the Kushavati) as well as a large area to the north of the Chelur-Bagenhalli road, have been included in Schedule B. The portion of the Catchment to the north of the Chelur-Bagenhalli road being for the greater part very hilly and steep, a large proportion of the flow from the Catchment is obtained from this area. The large Gudibanda Tank on the main feeder impounds most of the run-off from the area above it.

(5) *Papaghni River Drainage.*—The list of Streams in Schedule B includes the portions of all the principal feeders in Mysore Territory below terminal tanks now in existence on those Streams. The Streams above these terminal tanks are close to the tops of the water-shed, from five to six miles in all cases; on these upper portions of the Catchment ther are numerous tanks already in existence, and the surplus supply from these upper Streams is very little; the country is nearly all under cultivation, and the run-off from ploughed soil or land when under crops is very small.

(6) *Palur River Drainage.*—Schedule B includes all the the principal feeders of the river. The other drainages on the Eastern and Southern Frontier are very small and of no importance either to Madras or Mysore.

On this Catchment, there are, it is believed, no Madras tanks on any of the drainages from the Mysore Territory ; and there are no works in the Palar River, it is believed, above the Palar Anikat near Arcot, about 85 miles from the Frontier of Mysore.

It may also be mentioned that on the main drainage of the Palar River, in Mysore, there are 1,000 tanks, some of them of very large size, on 803 square miles of Catchment area, and assuming a supply of 48,000 units (1 unit=10,000 c.yds.) as available from the Catchment, which would be equivalent to a run-off of 7 inches per square mile, we only obtain an average of 48 units as available for each tank now in existence ! The surplus water available therefore from such a Catchment as this would be of very little use to help the floods in the Palar River.

(7) *The Pennar or South Pinakini Drainage.*—All the principal feeders of the river in Mysore Territory are included in Schedule B. There are, it is believed, no Madras works on this river above the Tirukoilur Anikat in South Arcot, some 140 miles from the Mysore Frontier.

On this Catchment, there are numerous tanks in existence on all the minor Streams. The details of the principal tank series on this Catchment above terminal tanks are—

(1) Koppa 47·7 Sq. miles ; 76 existing tanks—units available at 60 units per Square mile—2862

or only 38 units to each tank, many of which are large and important.

		Sq. Miles	Tanks.	Units available.	Units per tank.
(2)	Budikote Series	114·5	160	6,870	43
(3)	Masti ,, ...	45·4	63	2,724	43
(4)	Malur ,, ...	66·5	65	3,990	61
(5)	Vagata ,, ...	31	33	1,860	56
(6)	Hoskote series including Kadgodi ...	524	246	31,440	128
(7)	Vartur ,, ...	106	122	6,360	52
(8)	Bidarguppe,, ...	88	109	5,280	50
(9)	Attibele ,, ...	38	62	1,596	37

The Budikote stream below the Mysore terminal tank is of considerable length, as also the Koppa Stream ; but the surplus supply available from above the terminal tanks in these cases would be very little.

The whole of the Masti Series has been conceded, as the Catchment is hilly, and the run-off perhaps more than here estimated.

The run-off from the terminal tanks in the Vagata and Malur Series would be small, as the lower tanks are of comparatively large size.

The Hoskote Series is perhaps of some importance for supply and the principal feeder—the Kadgodi Branch of this Stream—has been conceded.

The run-off from the terminal tanks in the Vartur, Attibele and Bidarguppe Series is small, the terminal tanks themselves and those immediately above these being very large and important.

(8) *Cauvery River Catchment.*—Here, as in the Tungabhadra, the floods in the river are mainly supplied by the run-off from the Catchments in the upper reaches of the several main feeders situated in Manjarabad, Coorg and Heggaddevankote. The run-off from the minor Catchments in Chamarajnagar and Malvalli Taluks of Mysore, near the Frontier, does not materially affect the floods in the river, upon which, it is believed, the Madras Irrigation Works below almost entirely depend for their supply.

As the Durbar are most anxious for some early definite arrangement, they have included in Schedule B Streams and Drainages of doubtful benefit to Madras, but of vital importance to Mysore. The foregoing remarks and a glance at the map will show that the arrangement now proposed is more suitable in every way than fixing any particular limit of distance from the Frontier all round, without regard to the varying circumstances of particular localities and drainages.

V. *Schedule C* is a list of works now in progress which would be affected by the Rules now proposed, but as these works were started before the question of the diminution of the supply to Madras Works arose, they are to be allowed to be completed.

VI. A list is under preparation of the more important irrigation works which either had been, or are now, under contemplation by Mysore, and which under the Rules now proposed will have to be submitted to the Madras Government for their consent before being undertaken.

VII. The following maps accompany :—

(i) Rolled map of Ordnance Survey Sheets, 4 miles to an inch, on which the Rivers and Streams defined in Schedules A and B are colored blue ; the Catchment areas in Schedule B being also colored blue. The numbers entered in red ink on the map are the Serial Numbers as entered in Schedule A, and the blue figures Serial Numbers as entered in Schedule B.

(ii) An Index map, 16 miles to an inch scale, on which the Rivers and Streams and Catchment areas are also shown.

No. 3—1 DATED 4TH JANUARY 1892.

FROM

The Secretary to the Government of Mysore,
Public Works Department.

To

The Assistant to the Resident.

SIR,

With his letter No. 1 A of 10th June 1890, the Dewan submitted to the Resident a Memorandum on the subject of the restoration and construction of Irrigation works in Mysore, the right to effect which without restriction had been disputed by the Madras Government. In that letter, he urged the Resident to represent the matter in full to the Government of India, in view to a settlement of the points at issue.

2. Colonel Sir Oliver St. John informed the Dewan in April last that the Government of India would prefer the matter to be settled if possible by some understanding between Madras and Mysore, and before leaving Ootacamund this year, he arranged for a conference between Officers of the two Governments. Under such circumstances, the Durbar again made endeavours in conference with the Madras Government to arrive at an amicable understanding regarding our future Irrigation operations, so that controversy might be obviated in regard of individual works, and a sphere of operations declared in which Mysore projects should be absolutely untrammelled. At the same time, restrictions to be accepted by the Durbar, on certain classes of works on certain rivers and in certain valleys which might affect prejudicially Madras works beyond the frontier.

3. The Rules and Schedules which I now forward embody the arrangements which have been come to in an informal manner, by personal discussion, or by demi-official communications, and I am desired to request you will be good enough to move the Resident to now obtain from the Government of Madras their *formal* acceptance of the same. They will then be adopted by Mysore for future guidance of the Irrigation Officers.

4. Annexed to the final Rules and Schedules is printed the demi-official correspondence which led to the modification of the Rules after they were first framed and discussed at Ootacamund in May last. These letters will show that the general terms of the settlement have, with an exception, been informally agreed to by both Governments.

5. The exception I allude to is that referred to in the secondary clause to Rule V. The decision of the Government of India will be necessary on that point, *viz.*, the existence of a liability on the part of Mysore on account of three large Reservoirs now actually under construction, and if such liability exists the extent of it, but the definite acceptance by Madras of the Rules and Schedules as now drawn up is desirable before the controverted cases are specially referred.

I have, etc.,

C. BOWEN, COL., R.E.,

Secretary to the Government of Mysore,
Public Works Department.

RULES DEFINING THE LIMITS WITHIN WHICH NO NEW IRRIGATION WORKS ARE TO BE CONSTRUCTED BY THE MYSORE STATE WITHOUT PREVIOUS REFERENCE TO THE MADRAS GOVERNMENT.

I In these Rules,

(1) "*New Irrigation Reservoirs*" shall mean and include such Irrigation Reservoirs, or tanks, as have not before existed, or having once existed, have been abandoned and been in disuse for more than 30 years past.

(2) A "New Irrigation Reservoir" fed by an anikat across a stream shall be regarded as a "*New Irrigation Reservoir across*" *that stream.*

(3) "Repair of Irrigation Reservoirs" shall include (*a*) increase of the level of waste weirs and other improvements of existing Irrigation Reservoirs or tanks, provided that either the quantity of water to be impounded, or the area to be irrigated, is not more than the quantity previously impounded, or the area previously irrigated, by them; and (*b*) the substitution of a new Irrigation Reservoir for and in supersession of an existing Irrigation Reservoir but in a different situation, or for and in supersession of a group of existing Irrigation Reservoirs, provided that the new work either impounds not more than the total quantity of water previously impounded by the superseded works, or irrigates not more than the total area previously irrigated by the superseded works.

(4) Any increase of capacity other than what falls under "Repair of Irrigation Reservoirs" as defined above shall be regarded as a "New Irrigation Reservoir"

II. The Mysore Government, shall not without the previous consent of the Madras Government, or before a decision under Rule 4 below, build (*a*) any "New Irrigation Reservoirs" across any part of the thirteen main rivers named in the Appended Schedule A, or across any streem named in Schedule B below the point specified in Column 5 of the said Schedule B, or in any drainage area specified in the said Schedule B, or (*b*) any "New Anikat" across the minor streams of Schedule A, *viz.*, 4 to 9, and 14 and 15, or across any of the streams of Schedule B, or across the following Major streams of Schedule A, lower than the points specified hereunder :—

Across 1. Tungabhadra—lower than the road crossing at Honhalli ;

Across 10. Cauvery—lower than the Ramaswami anikat,

and Across 13. Kabani—lower than the Kampur anikat.

III. When the Mysore Government desires to construct any "New Irrigation Reservoir" or any "new anikat" requiring the previous consent of the Madras Government under the last preceding Rule, then, full information regarding the proposed work shall be forwarded to the Madras Government and the consent of that Government shall be obtained previous to the actual commencement of work. The Madras Government shall be bound not to refuse such consent except for the protection of prescriptive right already acquired and actually existing, the existence, extent, and nature of such right and the mode of exercising it being in every case determined in accordance with the law on the subject of prescriptive right to use of water and in accordance with what is fair and reasonable under all the circumstances of each individual case.

IV. Should there arise a difference of opinion between the Madras and Mysore Governments in any case in which the consent of the former is applied for under the last preceding Rule, the same shall be referred to the final decision either of arbitrators appointed by both Governments or of the Government of India.

V. The consent of the Madras Government is given to New Irrigation Reservoirs specified in the appended Schedule C, with the exception of the Srinivasasagara New Reservoir across the Pennar, the Ramasamudram New Reservoir across the Chitravati, and the Venkatesasagara New Reservoir across the Papaghni. Should, owing to the omission of the Mysore Government to make or maintain these works in a reasonably adequate standard of safety, Irrigation works in Madras themselves in a condition of reasonably adequate safety be damaged, the Mysore Government shall pay to the Madras Government reasonable compensation for such damage.

As regards the three new Reservoirs excepted above, the admissibility of any compensation from Mysore to Madras on account of loss accruing to Madras Irrigation Works from diminution of supply of water caused by the construction of the said works, will be referred to the Government of India whose decision will be accepted as final, and should such compensation be decided to be admissible, the decision of the Government of India as to the amount thereof will be accepted, after submission to them of the claims of Madras which should be preferred in full detail within a period of five years after the completion of said works.

VI. The foregoing rules shall apply as far as may be to the Madras Government as regards streams flowing through British Territory into Mysore.

SCHEDULE A.

Main Rivers.	Remarks.
1. Thungabhadra	
2. Thunga	Tributary of Thungabhadra.
3. Bhadra	Do do.
4. Hagri or Vedavati	Do do.
5. Pennar or Northern Pinakini ...	
6. Chitravati	Tributary of the Pennar or the Northern Pinakini.
7. Papaghni	Do do.
8. Palar	
9. Pennar or Southern Pinakini ...	
10. Cauvery	
11. Hemavati	Tributary of the Cauvery.
12. Lakshmanatirtha	Do do.
13. Kabani	Do do.
14. Honhole (or Suvarnavati) ...	Do do.
15. Yagachi, up to the Belur bridge ...	Do Hemavati.

SCHEDULE B.

A list of the Minor Streams and Catchments in Mysore Territory on which no New Irrigation Reservoirs are to be built within the limits specified, without previous reference to the Madras Government.

Serial Nos. in Schedule A.	Drainages	Serial Nos.	Minor Branches	Defined limit on a stream below which, or defined drainage area within which, no New Irrigation Reservoirs are to be built without previous reference to Madras Government	Distance from frontier as measured up the Stream (approximate)	Remarks
1	2	3	4	5	6	7
1	Tungabhadra ...	1A	Choradi or Kumadvati ...	Up to the bridge on this river on Hounali-Shikarpur road.	10 miles ...	
		1	Salikere halla	The bund of Sulikere Tank ...	46 miles ...	The Sulikere Tank seldom discharges. This stream joins the Tungabhadra in Mysore Territory.
		2	Sagali-halla	Up to the boundary line of the Channagiri Taluk.	40 do ...	Above this point there are numerous existing tanks and the run-off from these smaller catchments is of no appreciable importance to floods in the Tungabhadra River.
		3	Sarati-halla	As far as the boundary line of the Kakkargola and Avargola villages.	9½ do ...	A stream of insignificant importance to floods in the Tungabhadra River. This stream joins the Tungabhadra River in Mysore Territory.
		4	Branch of Sarati-halla from east.	Up to Kadaji Tank bund ...	16½ do ...	Catchment above the Kadaji Tank small and insignificant.
		5	North Hagari	Up to boundary of Chitaldrug Taluk ...	12½ do	There are no existing Madras works on this branch of the Tungabhadra.
		6	Branch of do	Up to Anaji Tank bund ...	10 do	

SCHEDULE B.—*continued.*

Serial Nos. in Schedule A.	Drainages	Serial Nos.	Minor Branches	Defined limit on a stream below which, or defined drainage area within which, no New Irrigation Reservoirs are to be built without previous reference to Madras Government	Distance from frontier as measured up the Stream (approximate)	Remarks
1	2	3	4	5	6	7
I	Tungabhadra ...	7	Sokke-halla	Up to the Hoskere Tank bund ...	9 miles	No existing Madras works on this stream before it joins the North Hagari. Catchments above Hoskere and Kyasenhalli Tanks very small and insignificant.
		8	Branch of Sokke-halla ...	Up to the Kyasenhalli Tank bund ...	9 do	
		9	Jiganhalli Tank (Madras) catchment.	The whole of the outlying bit of Mysore Territory which drains into this Madras Tank.		This is an outlying bit of Mysore Territory in Latitude 14-55′ ; Longitude 76-38′.
		10	Anantapur Tank (Madras) catchment.	The whole of the area of the extreme northern portion of the Molakalmuru Taluk in Mysore which drains northwards into the Anantapur (Madras) Tank catchment.	...	There are existing Madras Tanks below, and the whole area which drains into such thanks is included.
IV	Vedavati or Hagari. ✓	11	Chinna-Hagari	Up to where the stream crosses the frontier near Rangaiyandrug.	16 miles	No existing Madras works affected. This stream joins the main river about 8 miles beyond the frontier.
	✓	12	Sherikola-halla, or Nagalapura Tank (Madras) catchment.	The whole catchment area in Mysore Territory.		Affects the supply to Madras Tank below

		✓	13	Rangasamudram Tank (Madras) catchment.	The whole area of catchment of the tank in Mysore Territory.	...	The stream from this catchment leaves Mysore Territory in Latitude 14-37′-30″ and Longitude 76-48′-30″.
		✓	14	Yaradkere tank (Madras) catchment.	Do do	...	The Yaradkere in Madras is in Latitude 14-30′, Longitude 76-57′-3″.
		✗	15	Main stream of the Talak drainage.	Up to the bridge over this stream on the Salem-Bellary Road.	15½ miles ...	The road is a convenient point for a limit. No Madras works affected. This stream joins the Vedavati river within Mysore limits.
		✗	16	Main stream of the Dodderi drainage.	Up to the boundary of the Hosahalli Village	17½ miles ...	Latitude 14-21′ ; Longitude 76-49′. No existing Madras works affected. This stream joins the Vedavati river within Mysore Territory.
		✓	17	Virapsamudram and Amarapur tank (Madras) catchments.	The whole area of catchment of this series in Mysore Territory.	...	This area represents a large proportion of the Pavagada Taluk of Mysore.
V	Pennar or Northern Pinakini.		18	Mulkalkara tank (Madras) catchment.	Do do	...	This Madras Tank is situated in Latitude 14-8′ ; Longitude 77-26′-20″.
			19	Ruddam tank (Madras) catchment.	Do do	...	A considerable area in the north of the Maddagiri Taluk of Mysore is on this catchment.
			20	Virapsamudram tank (Mysore) catchment.	Do do	...	This terminal Tank is in S. E. corner of the Pavagada Taluk of Mysore, but there are some Madras tanks above in the Madaksira Tahsildari. The catchment excluded from Mysore operations is chiefly in the north of the Maddagiri Taluk.

SCHEDULE B—*Continued.*

Serial Nos. in Schedule A.	Drainages	Serial Nos.	Minor Branches	Defined limit on a stream below which, or defined drainage area within which, no New Irrigation Reservoirs are to be built without previous reference to Madras Government	Distance from frontier as measured up the Stream (approximate)	Remarks
1	2	3	4	5	6	7
V	Pennar or Northern Pinakini.	21	Purghi tank (Madras) catchment.	The whole area of catchment of this series in Mysore Territory.	...	The catchment excluded from Mysore operations is in the north of the Maddagiri Taluk.
		22	Jayamangali river	Up to its junction with the Garudachala Stream.	28 miles ...	The river above this point is of minor importance to Madras.
		23	Suvarnamukhi branch of Jayamangali.	Up to site of Rampur Anikat ...	25 do ...	Joins the Jayamangali a few miles below this point.
		24	Kumudvati	Up to site of anikat feeding the Kadagatur and Gundagal Tanks in Mysore.	9½ do ...	This stream joins the Pennar on the Mysore frontier.
		25	Chaulur tank (Madras) catchment.	The whole direct catchment of this tank in Mysore Territory.	...	This Madras Tank is on the west bank of the Pennar just outside Mysore Territory.
		26	Western, or Thondebhavi branch of the Pennar or N. Pinakini.	Up to its source	27 to 30 miles	
		27	Central or Varvani branch of the Pennar or N. Pinakini.	Do	25 miles ...	
		28	Hindupur Tank (Madras) catchment.	The whole area of catchment of this series in Mysore Territory.	...	An important and large area of the Goribidnur Taluk is here excluded from Mysore operations in a part where water for irrigation is much appreciated.
VI	Chitravati ...	29	Kushavati stream (Bukkapatna Tank catchment in Madras).	Up to site of Daparti anikat	10½ miles ...	The large Gudibanda tank in Mysore and the 20 smaller tanks above impound a very large proportion of the upper catchment already.

		30	Chitravati catchment (Bukkapatna Tank catchment).	The whole area to the North of the Chelur-Bagenhalli Road.	...	This portion of the Chitravati catchment being more hilly and barren, the run-off is greater than in the more cultivated and level catchment to the South of the Chelur-Bagenhalli Road.
VII	Papaghni River...	31	Vandaman-halla ...	Up to Naremadipalli Tank ...	9½ miles ...	No Madras works affected up to the junction of this stream with the Papaghni River.
		32	Guntpalli Tank (Madras) catchment.	The whole area of catchment in Mysore Territory.	...	This Madras Tank is situated just above the large Vyasasamudram Tank.
		33	Sadam Tank (Madras) catchment.	The main stream up to its source ...	17 to 18 miles.	This Madras Tank, the waterspread of which is partly in Mysore Territory, drains into the Papaghni River just above the Vyasasamudram Tank.
		34	Kotagal branch of the Papaghni	Up to Kotagal Tank	Do ...	The catchment above Kotagal Tank is comparatively small and unimportant with numerous small tanks already on it.
		35	Tippasamudram Tank (Madras) catchment.	The Marasanpalli-Digavakote stream up to Digavakote Pathacheravu Tank; and the Marasanpalli Gundedu stream up to Gundedu Tank.	9½ miles ... 13 do ...	These are the only two important streams on this catchment, and above these terminal tanks there is a large number of small tanks on the small drainage. These terminal tanks are only situated from 4 to 5 miles from the watershed of the Palar.
		36	Rangasamudram Tank (Madras) catchment.	Adgal stream up to Adgal-Vasantanaikankere Tank.	6½ do ...	The Adgal Tank is situated six miles from the water-shed, and there are numerous tanks in this distance.
				Kurigepalli branch stream up to the Kurigepalli Tank.	4½ do ...	The Kurigepalli Tank is only four miles from the watershed, and there are some 18 small tanks above it.
VIII	Palar River ...	37	Nangli (Mysore) Tank drainage.	Main stream up to its source ...	17½ do ...	There are 12 Mysore Tanks situated on this main stream.

SCHEDULE B—*concluded.*

Serial Nos. in Schedule A	Drainages	Serial Nos.	Minor Branches	Defined limit on a stream below which, or defined drainage area within which no New Irrigation Reservoirs are to be built without previous reference to Madras Government	Distance from frontier as measured up the Stream (approximate)	Remarks
1	2	3	4	5	6	7
	Palar River ...	38	Shettikal (Mysore) Tank drainage.	Main stream up to its source ...	10 miles ...	There are about five existing Mysore Tanks and one breached tank on this main stream.
		39	Malinayikanhalli (Mysore) drainage.	Do do	6½ do ...	There are 4 existing Mysore Tanks on this main stream.
		40	Vegmadgu (Mysore) drainage ...	Do do	7 do ...	There are four existing Mysore Tanks on this main stream.
		41	Tailur Tank (Mysore) drainage.	Do do	23 do ..	There are 10 Mysore Tanks on this important branch of the Palar, the terminal tank being 12½ miles from the frontier.
IX	Pennar or South Pinakini.	42	Vrishabhavati River ...	Main stream up to Koppa (or Kuppam Tank).	16 do ...	There are 76 tanks above the Koppa Tank which is only some 12 miles from the watershed.
		43	Budikote Stream ...	Main stream up to Thimmanayakanhalli Tank.	21 do ...	There are 146 tanks above this terminal tank which is only about 12 miles from the watershed.
		44	Masti catchment ...	The whole area of catchment in Mysore Territory.		About 45·40 square miles in area in which there are 63 tanks in existence.
		45	Kadgodi drainage ...	Main stream up to its source ...	36 miles ...	There are 10 Mysore Tanks on this main stream now in use, most of them of large size.

SCHEDULE C.

A list of works already in progress, and which are to be allowed to be completed, although they would be barred by the proposed rules for restriction of Mysore operations.

Serial Number in Schedule A.	Main river drainage	Serial Number of stream or catchment in Schedule B.	Name of work in progress	Date on which work was sanctioned.	Amount of estimate in Rupees	Expenditure incurred to end of March 1891	Descriptive Remarks
I	Tungabhadra ...	...	...	...	...	...	No works in progress on these catchments which are affected by the proposed rules submitted to Madras.
II	Tunga ...	...	...	...	...	...	
III	Bhadra ...	...	...	...	...	...	
IV	Hagari or Vedavati	17	Restoration of the Arsikere Hampaiyandurga tank.	May 1889 ...	4,362	...	The estimate provides for raising the weirs by 2 ft., and increasing capacity from 107 to 163 units. Work in abeyance owing to objection raised by Madras Government. But it is not intended to irrigate more than the area of land (189 acres) assessed as wet by the Revenue Survey.
		17	Restoration of the Arsikere Gujjarappankere tank.	May 1889 ...	3,582	...	The estimate provides for raising the weir by 1 foot, and to increase the capacity from 149 to 186 units. The raising of the weir by 1 foot will not do more than compensate for the silting up of the bed for years.
V	Pennar or Northern Pinakini.	Main stream...	New Reservoir (Srinivasa-sagara) across the river near Kotagarahalli.	July 1888 ...	99,206	66,696	This new masonry dam with earthen bund on flanks is $\frac{3}{4}$rds completed. No Madras works affected. The capacity of the tank will be 610 units, and it is intended to irrigate 800 or more acres. This work is referred to by Colonel H. Smalley, R.E., in his No. 674, dated 10th June 1890, to Chief Engineer for Irrigation, Madras.
		28	Restoration and improvement of Myala tank.	September 1887	(Original Estimate) 14,452	...	The capacity was increased from 95 units to 318 units, and the work is nearing completion. This tank is on the Hindupur (Madras) tank catchment, but only has a catchment of 38·80 square miles of its own.
				December 1889	(Revised Estimate) 17,168	13,130	

SCHEDULE C.—*Concluded.*

Serial Number in Schedule A.	Main river drainage	Serial Number of stream or catchment in Schedule B.	Name of work in progress	Date on which work was sanctioned	Amount of estimate in Rupees	Expenditure incurred to end of March 1891	Descriptive Remarks
V	Pennar or Northern Pinakini.	28	Raising the weirs of the Mahamalleswara tank.	September 1890	3,165	865	This is a small tank above the Myala noted above. The estimate provides for increasing the capacity of the tank from 62 to 102 units, the former capacity having proved insufficient to irrigate the 198 acres of assessed wet lands. No increased area of irrigation is provided for. The total catchment above this tank is only 3 square miles.
		28	Restoring the Manivala Tank.	February 1889	4,094	2,860	The tank weir is to be raised 2 feet, and capacity increased from 139 to 211 units, but only in order to impound sufficient water to irrigate the tanks' original atchkat of 350 acres.
VI	Chitravati ...	Main stream...	New Reservoir (Ramasamudram) near Periasandra.	May 1888 ...	75,077	51,824	This Reservoir is noticed by Colonel H. Smalley, R.E., in his No. 674, dated 10th June 1890, to Chief Engineer for Irrigation. It is to have a capacity of 1,207 units to irrigate 1,200 acres. The catchment area above the tank is 47·61 square miles.
		30	Restoration of the Malsandra Rachevar Tank.	December 1888	4,742	4,724	Weirs of the tank were raised 2 feet, increasing the capacity from 105 units to 159 units. It is not intended to increase the area originally irrigated, 258 acres. The capacity of the tank is even now insufficient unless the tank fills 1½ times in the year. Work is nearly completed.
VII	Papaghni River ...	Main stream...	New Reservoir (Venkatesasagara) near Devaganhalli.	June 1888 ...	60,985	28,423	This work is noticed by Colonel H. Smally, R.E., in his No. 674, dated 10th June 1890, to Chief Engineer for Irrigation. The tank will impound 517 units as designed, and will perhaps irrigate 750 acres if it fills 1½ times. The catchment above the tank is 61 square miles.

		Main stream ...	Restoring the Buradagunte anikat, Channel and Tank.	December 1888	25,575	17,350	This work consists in (1) building a masonry anikat with the usual earth flank bunds across the main stream, (2) restoring the old channel therefrom, and (3) restoring the Buradagunte Timmasani Tank and increasing its capacity from 111 units to 167 units. This project is also noticed by Colonel Smalley in his Report No. 674, dated 10th June 1890.
			Restoring the Timmanayakanhalli Agrahar Tank.	August 1888 ...	16,776	13,234	Noticed also in Colonel Smalley's letter above quoted. This is a restoration of an old breached tank 26 miles up the main stream and 2 miles above the Chintamani-Bagenhalli Road. The tank is to impound 240 units and irrigate 250 acres as against its original atchkat (irrigable area) of 330 acres as per Revenue Survey maps. Work is nearing completion.
		35	Restoring Kotekallur Tank.	April 1888 ...	6,564	5,690	This project consists in the restoration of a tank which breached in 1874, and for increasing its capacity from 25 to 80 units. It is 6 miles from the frontier on the Tippasamudram (Madras) Tank catchment.
VIII	Palar River ...	37	Restoring the Byatnur-Nagavara Tank	September 1888	14,300	8,102	This is the terminal tank of the Series. The capacity being increased from 152 to 320 units, it is only intended to irrigate the original area of 365 acres included in the atchkat.
		37	Restoring Marandhalli Tank.	March 1886. Revised Estimate in July 1888.	5,345	5,254	The project provides for raising the weirs 3 feet and increasing the capacity from 121 to 186 units, to irrigate perhaps 250 acres. Work is nearing completion.
		41	Restoring Jagalkashti Dodkere Tank.	April 1888. Revised Estimate in January 1890.	7,246	7,210	Project provides for raising the weirs 3 feet and increasing capacity from 50 to 107 units. Work is nearly completed. No Madras works affected.
IX	Pennar or Southern Pinakini.	Main stream ...	Restoring Bhadram Tank...	April 1888 ...	21,689	15,033	The project provides for raising the weirs of this tank by 3 feet and increasing the capacity from 701 units to 1,225 units. The work to the tank itself is nearly completed and only channels have now to be extended.
		44	Restoration of Santehalli Tank.	November 1889	7,480	4,076	This tank is in the Masti catchment. The weirs are to be raised 3 feet, and capacity increased from 93 to 154 units. No Madras works are affected.

No. 1022-346-90, dated, Bangalore, 26th March 1892, From The First Assistant to the Resident in Mysore to the Secretary to the Government of Musore Public Works Department.

SIR,

With reference to your letter No. 3—1, dated the 4th January 1892, I am directed to inform you that the Rules and Schedules in connection with the restoration and construction of Irrigation Works in Mysore, forwarded therewith, are accepted by the Madras Government.

I have the honour to be,

Sir,

Your most obedient servant,

(Signed) C. W. RAVENSHAW, MAJOR,

First Assistant to the Resident.

No. 1-B (c).—Sir K. Seshadri Iyer's Memorandum. dated 7th September 1899 about the object and scope of the Rules defining the limits within which no new irrigation works are to be constructed without previous reference to the Madras Government.

Some misapprehension appears to exist regarding the object and scope of the "Rules defining the limits within which no new irrigation works are to be constructed by the Mysore State without previous reference to the Madras Government," which have been adopted by mutual agreement between the Governments of Madras and Mysore as per the marginally noted correspondence.

1. Letter No. 3—1, dated 4th January 1892, from Secretary to Government of Mysore, D.P.W., to the First Assistant to the Resident.
2. Letter No. 1022—346-90, dated 26th March 1892, from the First Assistant to the Resident, to Secretary to Government of Mysore, D.P.W.

2. These Rules are not intended to curtail in any way the rights of the State to utilize the waters within its territorial limits. Such rights must always be decided on the merits of each case, according to the accepted principles of law applicable to the subject. Regarding these rights, I still hold the opinion given in the following paragraph of my Memorandum dated 10th June 1890, forwarded to the Resident in Mysore with my letter of the same date :—

> "6. I may perhaps be permitted to add a few remarks on the question of the right to the water in dispute.
>
> (*a*) The supply of water which we propose to store and use for irrigation and water-supply is only casual, intermittent, and exclusively dependent upon the rainfall on Mysore land. We have a *natural* right to collect and dispose of all water on the surface of our land, and though, as between private owners, such *natural* right would (subject to the exceptions hereafter to be noticed) be restricted to water *not* flowing in a defined channel, the case of a State is, I submit, very different. It has to deal with large interests and establish means of irrigation and water-supply over extensive areas, and it cannot effectually dispose of surface water before it enters some defined channel. And I submit that the question as affecting the State has to be decided on the higher grounds of public welfare and general prosperity, and not according to the strict rules of law applicable only to private rights.

" (*b*) The State naturally would have greater right of control over water falling on the surface of its own lands and gathering into a defined channel within its own frontier, than it would in the case of a stream rising outside its frontier and merely flowing through it into the Madras Districts; the obligations which may exist in respect of a stream of the latter kind do not arise in any of the cases under dispute. In all these cases, on the other hand, the works we propose would tend to hold back river-floods running more or less to waste and to establish more perennial streams flowing from Mysore into the Madras Districts.

" (*c*) If a right of easement by prescription is claimed on behalf of the Madras raiyats, I can only say (assuming that such a limiting right as an easement can at all be acquired by Madras raiyats against the Mysore State) that it is most difficult to say what period of time would be reasonable for the acquisition of such a right against the State. For obvious reasons, the 20 years of the Easement Act would be too short a term, and in the case of Mysore, the fact of the British Administration of the Province during half a century has an important bearing upon the question.

" Moreover, a right of easement can never be acquired by a mere *Permissive* user. It cannot be said that Mysore never intended to store its rainfall for irrigation and other purposes to a greater extent than it used to do at some remote period. It is indeed more reasonable to infer that the user in question was *permitted* to be in force only so long as the State did not wish or were not able to store more water. As a matter of fact, the history of the Mysore Irrigation Department, as already shown, bears ample testimony to the Mysore Government having always intended to store and utilize as much of its rainfall as possible, and the presumption of a grant from prescriptive enjoyment is therefore most distinctly and expressly negatived in the case of all Mysore streams, to the extent to which they may be capable of being utilized for irrigation and other purposes within Mysore Territory.

' It is also most important to remember that the so-called right by prescription cannot be claimed either in the case of recent Madras works or recent enlargement of old Madras works: nor as regards water which now flows to waste over existing Madras works, can any right whatsoever be claimed by Madras, for the essence of a prescriptive right is enjoyment and use, which cannot, of course, be predicated of what is allowed to run to waste.

' And lastly, it is worthy of note that we have always impounded—in increasing quantities as our works increased—as much of our rainfall as possible. This increasing appropriation has, until recently, never been objected to by Madras. This is not surprising if we remember that (as pointed out by Colonel Sankey in his letter of 19th November 1866) the old Mysore Tank system was so perfect that, were all tanks in their normal condition, none of the drainage of 16,287 square miles commanded by the system could possibly escape, and that, therefore, the so-called new works and new or increased storage of water were, in reality, new methods of securing what the old system secured in a different way.

And (*d*) even in the case of private riparian owners, they have the natural right to use the water flowing through their land in a defined channel for all reasonable purposes including the irrigation of land, *provided they do not thereby destroy or materially diminish or affect the application of the water by riparian owners below the stream*, either in exercise of their natural right or right of easement. (See Embrey *vs.* Owen, 6, Exch., 372, and XI Indian Law Reports, Madras 19). Assuming, for the sake of argument, that this

well-recognized principle of Municipal law is applicable to the case of two neighbouring Provinces, I am sanguine that it would be found, upon investigation, that Mysore is strictly within its right in carrying out the works to which objection has been taken by the Madras Government."

3. The Rules in question are intended for the guidance of our Engineers in the preparation of irrigation projects and to inform them as to the kind of new irrigation works regarding which the Durbar has undertaken to seek the previous consent of the Government of Madras, that Government on its own part agreeing 'not to refuse such consent except for the protection of prescriptive right already acquired and actually existing, the existence, extent, and nature of such right, and the mode of exercising it being in every case determined in accordance with the law on the subject of prescriptive right to use of water, and in accordance with what is fair and reasonable under all the circumstances of each individual case.' In the case of a difference of opinion between the Governments of Madras and Mysore in any case, a reference to arbitration or the final decision of the Government of India is provided.

4. It is obvious from the above that the Madras Government cannot object on the ground of proposed or possible future new works in its own territory. Its objection must be on the ground of protection of rights already actually existing and not of rights hereafter by user and enjoyment.

5. Under such circumstances, in the case of any new irrigation work in Mysore, which comes under the class for which the Rules in question provide a reference to the Madras Government, it is of the utmost importance to investigate beforehand, whether any "prescriptive right already acquired and actually existing" in Madras Territory is likely to be affected by the proposed Mysore work. Such investigation should include the collection of information as to the nature, extent and dimensions of any existing prescriptive right in Madras, when and how such right was acquired, how the same has been enjoyed, etc., *e.g.*, suppose a new work in Mysore (coming under the Rules) is at all likely to diminish the supply of water to an existing Madras tank, the information to be collected should include (1) when the Madras tank was constructed, or enlarged, (2) whether twenty years have elapsed since such construction or enlargement, (3) its capacity and the area which drains into it, (4) the area of actual irrigation under it, (5) whether the new Mysore tank is likely to cause any and what diminution of supply for the existing irrigation in Madras, and, if so, whether such diminution can be regarded as material or as causing any appreciable practical injury to such irrigation.

6. During my recent tour, the want of sufficient irrigation in Davangere Taluk was strongly pressed upon my attention by the local officers. Some of the most eligible projects had not been investigated as being within the tract in which the Rules in question have operation. They should be investigated on the lines above suggested.

7-9-99. K. SHESHADRI IYER.

P. S.—In para 2 of the Rules "and 15" is a mistake, and no reference to the Madras Government should be necessary in respect of a new anikat across the Yagachi River.

K. S.

AGREEMENT REACHED AT THE CONFERENCE OF MYSORE AND MADRAS HELD IN THE SECRETARIAT AT BANGALORE ON THE 4TH AND 5TH SEPTEMBER 1933.

EXTRACT.

1. (i) As regards repairs to irrigation reservoirs falling within the definition in Rule I (3) of the Agreement of 1892—whether they involve the increase of the level of waste-weirs or the construction of new reservoirs in substitution of old ones —intimation will, as far as possible, be given by Mysore in future before the work is commenced with details of what is proposed to be done. The Madras Government will, as far as possible, give similar information in respect of similar works in the Madras Presidency which may affect the prescriptive rights for which protection may be claimed under the rules in the Agreement of 1892.

(ii) By analogy, the construction of new anicuts in place of existing ones will be treated similarly, but Mysore and Madras Government will, as far as possible, give similar intimation before work is commenced.

(iii) An anicut will include any construction of rough stone (dry) or masonry across a river either in part or fully and in any direction which will have the effect of diverting water from the river, but the consent of the Madras Government will not be required under the Agreement of 1892 for the construction of any new anicut if there is to be no irrigation under it.

(Sd.) M. G. RANGAIYA,
Chief Engineer and Secretary to the Government of Mysore, Public Works Department, Bangalore. 5-9-1933.

(Sd.) N. GOPALASWAMY,
Secretary to the Government, Public Works and Labour Department, Government of Madras.
5-9-1933.

" Extract "

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